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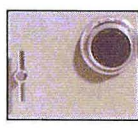
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Interview



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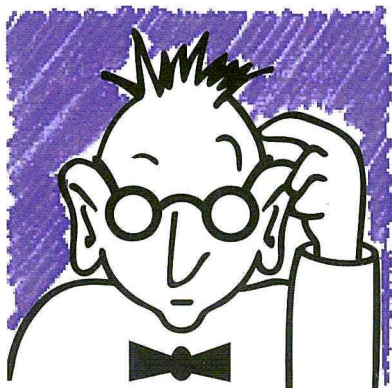
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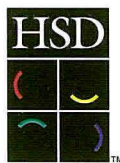
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Ten Most Wanted up NeXT

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T H E N E X T W O R L D

To appreciate how far ahead NeXT is in object technology, all you have to do is listen to the competition. The buzzwords mouthed by virtually every industry leader – ease of programming, mission-critical applications, in-house development – have a familiar ring.

But while Sun postures, Taligent fiddles, and Microsoft dreams about true object-oriented systems, a fully mature NeXTSTEP 3.0 is set to ship. By the time NeXT has any serious competition, NeXTSTEP may be on version 5 and shipping on a variety of hardware platforms. NeXT holds, minimum, a three-year lead on the field.

It's the same advantage that Apple enjoyed in graphical user interfaces in the '80s. While the competition gamely fought to catch up, Apple took advantage of its acknowledged lead to sell millions of Macs to business users. Today, the whole computing world is using GUIs, and Macintosh is a powerful second standard in the gigantic PC market.

In five years, the whole computing world will be making the transition to object-oriented environments. Can NeXT ride that wave, as Apple did, to become a dominant player in this new market?

There is plenty of time and plenty of opportunity. If NeXT can merely hang on to a respectable minority share of the expanding market for object-oriented systems, the rising tide will lift it to business success. If it can go beyond that by setting the object standards that others will follow, NeXT could emerge as a market leader in the latter half of the 1990s.

To do that, the top priority for NeXT is to continue growing its own market. It's hard to find fault with Steve Jobs's contention in the interview in this issue that NeXTSTEP is the only environment with shipping objects (see "Re-inventing NeXT," page 30). A whole new market of third-party objects has grown up around NeXTSTEP. Now it must create the demand among corporate customers to use these products. As usual, that brings us back to sales and marketing.

NeXT now has its foot in the door of corporations on the strength of its development tools and organizational productivity message. Our article in this issue demonstrates how real-world business users are gaining competitive advantage today from custom applications developed under NeXTSTEP (see "Mission Control," page 34). But this is only the first step: To push open the door of corporate acceptance, NeXT has to extend the benefits of object technology to a broader slice of organizational users.

So far, we've seen the advantages of object technology mainly for developers. But object technology provides huge benefits for applications that are not necessarily mission-critical.

Computing is all about information – accessing it, analyzing it, communicating it. Just as NeXTSTEP is great for quickly building money-making programs, it is also ideal for customizing work environments for database access, group interaction, and visual communications.

Are these functions mission-critical? Maybe, if you extend the definition. In fact, almost any work environment can benefit from the site-customization enabled by object technology. Tailoring group applications to the specific needs of an organization is bound to make it more effective.

The potential payoff in such a strategy is huge. No longer are we talking about a small niche of corporate custom programmers. By promoting its object technology for system integration and workgroup collaboration, NeXT has a chance to compete for every business desktop.

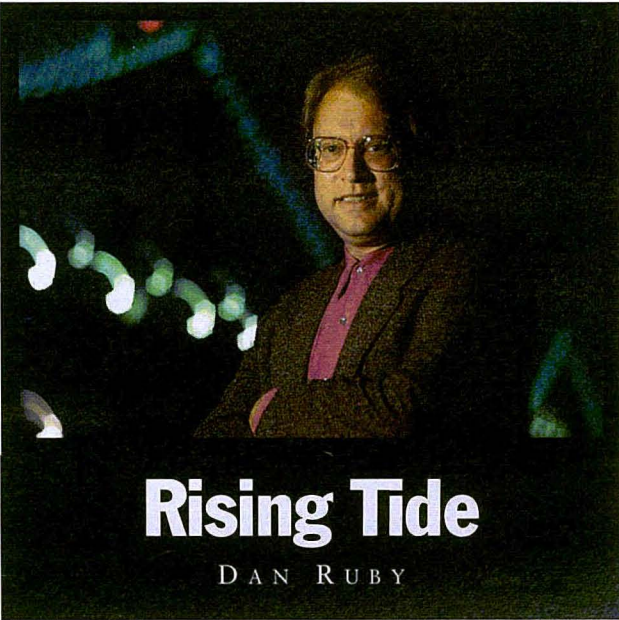
NeXT tried once before to sell the benefits of integration and collaboration under the banner of 'interpersonal computing.' There was nothing wrong with that message, except that it was ahead of its time. Users couldn't comprehend the advantages of interpersonal computing, and NeXT wasn't yet in position to supply the tools to make it a reality. Now, with NeXTSTEP 3.0, a weightier bag of third-party objects and applications, and the credibility gained from competitors parroting NeXT's strategy, NeXT can come back with a refined marketing message that corporate users will understand.

More old wine in a new bottle is publishing and graphics. The long-awaited arrival of powerful NeXTSTEP programs for page layout, image processing, illustration, and 3-D rendering will put a major focus on

NeXT graphics by this fall. The NeXT publishing environment will also take advantage of object technology to permit software solutions customized to the needs of the user. The same thing applies to other familiar markets like financial modeling and document management.

There is the well-known disadvantage to being a pioneer, and NeXT has the arrows in the back to prove it. So, at one time, did Apple. Now, as the rest of the computing world lines up behind NeXT in promoting the benefits of object-oriented computing, we know that the groundwork laid during the last five years has not been in vain.

★ ★ ★



We in the NeXT community have a special perspective on the presidential campaign of Ross Perot. For one thing, we know that he encourages cultures that do not necessarily conform to his spit-and-polish personal style. We also share his interest in using technology to enable new forms of democracy.

As the third-largest owner of NeXT stock and a former board member, Perot is well known to NeXT users, and a lot of them are lining up to support the campaign. NeXT itself may be supplying computers to the national campaign, which in early June was just taking over from the individual state petition drives.

Recognizing that you probably don't turn to a computer magazine for political commentary, NeXTWORLD won't advise its readers how to vote in the upcoming election. But I can't resist sharing my excitement about the Perot campaign. There could be nothing better for NeXT, the computer industry, or the U.S. business climate as a whole than Ross Perot in the White House. ♦

DAN RUBY is editor in chief of NeXTWORLD. He can be reached at druby@nextworld.com.

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Biology experiment

The first thing that came to mind while reading Dan Ruby's editorial ("Petri Dish," *NeXTWORLD* Summer 1992) was that the analogy could be extended to the comp.sys.next.* groups on the Internet.

It seems that these group NeXT in general, do indeed look like a biological organism. You prune them and let each branch grow as an individual and so have a healthy tree that is vibrant and alive with many strong healthy branches. Each can live without the other, but they are all dependent on the central trunk. Now we have to hope that our tree will be allowed a little light to flourish in the dense forest in which we collectively chosen to sprout.

GLENN REMPE
Tucson, Arizona

Natural integration

The article "Exporting from Phile" (*NeXTWORLD*, Summer 1992) illustrates how a NeXTSTI takes advantage of NeXTSTI seamless integration. Development from Stone Design should take full advantage of this and give it to users of programs to help them work with their computer. I also want to suggest that DataPhile should allow for exporting records directly to the pasteboard in ASCII format. This would have made it one easier to copy the mail address into the bcc: field in NeXT's application.

RICARDO J. PARADA
Tucson, Arizona

Most hyped

Regarding your Ten Most Wanted list, NeXT owes on-the-fly JPEG image compression to NeXTSTI owners, especially those who purchased an ND in early 1992 based on NeXT's hype. NeXT

PUTS TAPE.

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GLENN REMPE
Tucson, Arizona

Natural integration

The article "Exporting from Data-File" (*NeXTWORLD*, Summer 1992) illustrates how a NeXT user takes advantage of NeXTSTEP's seamless integration. Developers from Stone Design should take note of this and give it to users of their programs to help them work better with their computer. I also wanted to suggest that DataPhile should allow for exporting records directly to the pasteboard in ASCII form. This would have made it one step easier to copy the mail addresses to the bcc: field in NeXT's Mail application.

CARDO J. PARADA
Tucson, Arizona

Most hyped

Regarding your Ten Most Wanted NeXT owes on-the-fly JPEG image compression to NeXTdimen- sion owners, especially those who purchased an ND in early 1991 and on NeXT's hype. NeXT

pulled the old bait and switch by pocketing money for ND orders and shipping an inferior product. Even now, more than a year later, NeXT says it still has no plans to implement real-time JPEG compression.

Just for laughs, compare the glossy brochures on the NeXT product line as they appeared before JPEG hardware was cut (when we bought our machine), and after it was cut. The brochures and spec sheets look the same from one meter away, down to layout and copy. Closer up, however, you see the new ND photo has a vacant connector where the C-Cube chip was, and the new ad copy and specs tiptoe around the missing chip. Historical revisionism.

DYLAN KOHLER
Glendale, California

Builder vs. BASIC

I've used Interface Builder (IB) and am extremely happy with how easy it is to make powerful professional applications. But what advantage do I have using it when Visual BASIC is around to make easy custom apps on a PC? What's the key difference between the two (besides the platform) that makes NeXT IB a better tool? Or is there one?

DAVID L. NEUMANN
Engineer, Exxon Research
Houston

Visual BASIC is basic. Not being a structured - let alone object-oriented - language, it has none of the advantages of an object-oriented language, such as extensibility, reusability, and maintainability. Interface Builder comes with a rich

set of object kits that dramatically reduce the amount of time required to develop commercial-quality applications.

Though Visual BASIC does speed the development of an application, nobody would expect to use it to create a large, commercial application. When you hit its inherent brick walls, you must go back and rewrite your application from scratch. Interface Builder has no walls because the application is fully extensible at any time. Using Interface Builder never prevents

you from using the Application Kit directly in Objective-C. - Ron Lang, director of software product marketing, NeXT Computer

Waiting for ISDN

Come on now - someone didn't do their ISDN homework ("ISDN Comes of Age," *NeXTWORLD*, Summer 1992). The "D" stands for

puddle town up north here next door to Micro-who. After calling US West several times over the past few months, I was informed that:

1. US West is not interested in ISDN - or not very interested.
2. The Olympia, Washington, test project was abandoned.
3. US West has another system they are debating about implementing rather than ISDN.
4. If I forced them, they might actually hook it up for several hundred bucks. They had no idea of how much it would cost each month.

My assumption is that ISDN is being reserved for Betty and Bob Billionaire. And that outfits like

Microsoft are, or will be, developing some sort of other teleconnection system. Satellites?

TOM HICKS
Seattle

Your experience with your absentee telephone company mirrors my experience in Cambridge, where I have been waiting more than three months to get a residential ISDN line installed. Nevertheless, some Bell operating companies - most notably Pacific Bell, Bell Atlantic, and Bell South - have been making great strides in ISDN. If you lived in Mountain View, California, you could get ISDN installed in your house tomorrow for less than \$30 per month. - Simson L. Garfinkel

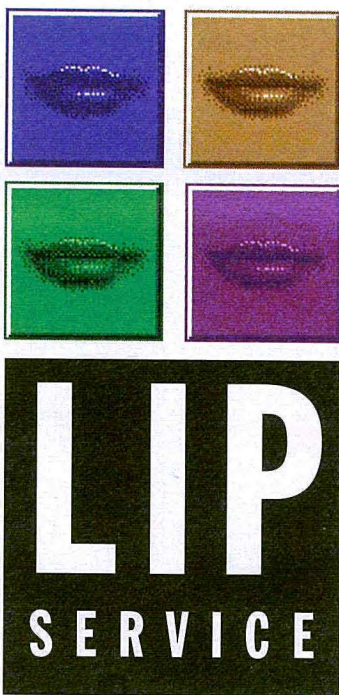
Missed on the list

Regarding your list of the Top 40 North American NeXT Sites in the Summer 1992 issue of *NeXTWORLD*: There are no less than 156 NeXTs registered in the Networking and Communication database here at Stanford University. If I remember correctly, some of the original board layout for the Cube was done here on campus by NeXT employees! A grievous omission.

MARK WARREN
Palo Alto, California

This is one of several letters we received noting omissions from our list. We will update our list next year. We also heard from several executives at NeXT, who told us they were surprised by how accurate the list was. - NW

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ANTICIPATION IS HIGH FOR USE OF

RANK	LAST QTR.	QTRS. ON LIST
1	2	3
2	10	3
3	8	5
4	U&C*	2
5	3	3
6	5	3
7	—	1
8	9	2
9	—	1
10	U&C*	3

ITEM

EXAMPLES OF OBJECT LINKS
LOW-COST ENTRY-LEVEL SYSTEM
EXTENDED TEXT OBJECT
TIME-BASED MEDIA STANDARD
NEXTSTEP PORT TO SPARCSTAT

ITEM

16-BIT COLOR UPGRADE PATH
END-USER RELATIONAL DATABASE
WORLD-CLASS SERVICE/SUPPORT
REASONABLE RAM/STORAGE
MULTIUSER PROJECT-MANAGEMENT

ITEM

NEXT MARKETING MESSAGE
3-D GRAPHICS/ANIMATION**
INEXPENSIVE COLOR PRINTER**
NEXTWORLD EXPO
OS DISTRIBUTION VIA CD-ROM**
NEXTSTEP PORT TO INTEL PCs**
NEXT SUPPORT FOR MAC FLOPPIES
SERVICES FOR LINKING APPLICATION
HYPERTEXT AUTHORIZING SYSTEM
PAGE-LAYOUT PROGRAM
BUILT-IN MIDI PORTS OR CARD

* On Up-and-Coming list last quarter
** Announced but not shipping

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O P E N E R S

TEN MOST WANTED

PAGE LAYOUT AND MIDI SUPPORT WENT IN THE BAG THANKS TO PASTEUP AND QUEST TECHNOLOGIES. ANTICIPATION IS HIGH FOR USE OF 3.0 FEATURES; CONCERN IS HIGH OVER NeXT MANAGEMENT.

RANK	LAST QTR.	QTRS. ON LIST	ITEM	COMMENT
1	2	3	JPEG COMPRESSION	Readers' loudest complaint
2	10	3	NeXT PORTABLE/NOTEBOOK	Get a '486
3	8	5	FULL-FEATURED CAD SOFTWARE	Designers clamoring
4	U&C*	2	EXPANDED MARKETING MESSAGE	Developers clamoring
5	3	3	OD SURVIVAL	Cube owners clamoring
6	5	3	\$99/MIPS WORKSTATION	Magic price/performance goal
7	—	1	NeXT MANAGEMENT STABILITY	Late entry rising fast
8	9	2	BETTER SYSADMIN SUPPORT	Licensing, configuration management
9	—	1	3-D MODELING PACKAGE	On top of 3DKit
10	U&C*	3	CHOICE OF KEYBOARDS	UNIX users prefer the old one

U P - A N D - C O M I N G

ITEM	COMMENT
EXAMPLES OF OBJECT LINKS	Proof of concept
LOW-COST ENTRY-LEVEL SYSTEM	Can Canon make it cheap?
EXTENDED TEXT OBJECT	Missed NeXTSTEP 3.0
TIME-BASED MEDIA STANDARD	Better than QuickTime
NeXTSTEP PORT TO SPARCSTATIONS	Second step for software strategy

S T I L L A C T I V E

ITEM	COMMENT
16-BIT COLOR UPGRADE PATH	Reward original buyers
END-USER RELATIONAL DATABASE	Custom apps not for everyone
WORLD-CLASS SERVICE/SUPPORT	New pricing plan a mixed blessing
REASONABLE RAM/STORAGE	Pricing on configured Turbos a help
MULTIUSER PROJECT-MANAGEMENT SOFTWARE	Standard IPC application

I N T H E B A G

ITEM	DATE REMOVED	COMMENT
NeXT MARKETING MESSAGE	Nov. 1991	Custom apps
3-D GRAPHICS/ANIMATION**	Jan. 1992	3DKit in NeXTSTEP 3.0
INEXPENSIVE COLOR PRINTER**	Jan. 1992	NeXT Color Printer
NeXTWORLD Expo	Jan. 1992	First of many
OS DISTRIBUTION VIA CD-ROM**	Jan. 1992	When 3.0 ships
NeXTSTEP PORT TO INTEL PCs**	Jan. 1992	Ship date slips
NeXT SUPPORT FOR MAC FLOPPIES**	Jan. 1992	NeXTSTEP 3.0
SERVICES FOR LINKING APPLICATIONS**	Jan. 1992	3.0's Object Links
HYPERTEXT AUTHORIZING SYSTEM	Jan. 1992	CraftMan ships
PAGE-LAYOUT PROGRAM	July 1992	PasteUp ships
BUILT-IN MIDI PORTS OR CARD	May 1992	MIDI Link from Quest

* On Up-and-Coming list last quarter
** Announced but not shipping

STREET PRICES

These are the best prices we could find, as of press time, on in-demand NeXT products. You should be able to match the price with a little shopping.

H A R D W A R E

PRODUCT	BEST PRICE	WHERE
NeXTstation (105MB hard drive, 8MB RAM)	\$3996	Abacus, 415/759-9508
NeXTstation TURBO (250MB hard drive, 8MB RAM)	\$4996	California Computer Options, 510/486-8292
NeXTstation TURBO COLOR (250MB hard drive, 16MB RAM)	\$7646	Abacus, 415/759-9508
660MB INTERNAL DRIVE	\$1185	Fast Access, 708/530-7749
1.2GB INTERNAL DRIVE	\$1780	Fast Access, 708/530-7749
1.44MB FLOPPIES	\$6.99/10	Fry's Electronics, 408/733-1770
2.88MB FLOPPIES	\$59/10	NeXTConnection, 800/800-6398
4MB SIMM (monochrome)	\$105	Stratum Technologies, 800/533-1744
4MB SIMM (color)	\$120	Stratum Technologies, 800/533-1744

S O F T W A R E

PRODUCT	LIST	STREET
CONCURRENCE (Lighthouse Design)	\$995	\$795
WINGZ (Informix Software)	\$699	\$589
ILLUSTRATOR (Adobe Systems)	\$699	\$449
MEDIASTATION (Imagine)	\$595	\$495
IMPROV (Lotus Development)	\$695	\$489
DATAPHILE (Stone Design)	\$695	\$649

BEST-SELLERS

These are the hottest-selling NeXT products as of press time, according to NeXTConnection, a direct-marketing distribution source for NeXT products. Note that NeXTConnection handles most, but not all, NeXT products.

H A R D W A R E

- 2.88MB ED FLOPPY DISKS (Toshiba America Electronic Components)
- CANON DOUBLE-SIDED OPTICAL DISKS (Canon USA)
- PLI SUPERFLOPPY 2.88MB FLOPPY DRIVE (Peripheral Land)
- 16MB MEMORY UPGRADE KIT (NeXTConnection)
- DOVEFAX FAX/MODEM (Dove Computer)

S O F T W A R E

- IMPROV (Lotus Development)
- ONDUTY (Digital Instrumentation Technology)
- MICROPHONE II (Software Ventures)
- DIAGRAM (Lighthouse Design)
- CONCURRENCE (Lighthouse Design)

...wing and
...earn interface
...XTSTEP
...ut for
...l expire
...forever!



Software for the way you work
1-800-428-APPS

...was created entirely in Appsoft Draw

An important message to NeXTSTEP™ application developers.

Need To Develop Your SYBASE™
Application In SQL

OR

Build And Test Your Application
Within The Interface Builder™

OR

Eliminate The Tedious Chore
Of Programming In Objective C

What Are You Waiting For?



Objective DB Toolkit™ can do all this and more... right now. There's no need to wait for NeXT's DB Kit™ to hit the streets, because it won't even have all these features.

Furthermore, if you purchase your Objective DB ToolKit and sign up for maintenance now, you're entitled to a FREE Objective DB ToolKit version 3 upgrade.

Amongst other things, version 3 will allow you to integrate your own palette and add your own functions to the script language. NeXT's DB Kit won't even have a script language.

So why lose valuable time and money when you could be at work right now developing your applications with the world's most flexible and versatile toolkit.

10 BIG REASONS TO BUY THE OBJECTIVE DB TOOLKIT

1. Build applications within the NeXT™ environment.
2. Cascade exits to any field or window.
3. Create an application using only SQL.
4. Code specialized exits in Objective C if necessary.
5. Tap the power of SYBASE without using 3GL coding.
6. Dramatically reduces development time.
7. Communicate data from field to field and window to window.
8. Objects palettes entirely integrated into the Interface Builder.
9. Store voice, images and large text without coding in Objective C.
10. Test an application in test-interface mode without compiling it first.

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**Order your FREE Objective DB ToolKit
Demo Disk now...Call (617) 246-2425.**



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Tel: (617) 246-2425 Fax: (617) 246-1443

Circle 33 on reader service card

PRESS CLIPS

There were strong indications that, pending another large infusion from Canon, Jobs was personally contributing to some of NeXT's \$5 to \$6 million monthly G&A expenses, including payroll.

RICHARD RAPAPORT, UPSIDE,
MAY 1992

After six and a half years of inflated expectations, false starts and self-inflicted wounds, we believe the stars are at last lining up for NeXT. Look for \$170 million sales this year – roughly break-even. Watch NeXT's sales once the machines start shipping with NeXTSTEP 3.0. The new software needs to kick NeXT's volume up to 2500 to 3000 units a month – as a base, not a peak. We think the product is good enough that that will happen.

RICH KARGAARD, UPSIDE,
MAY 1992

While at Texas Instruments, [new NeXT President Peter] van Cuylenburg managed a product transition similar to the one NeXT is attempting. "He groks our strategy in his bones," Jobs said.

LEE GOMES, SAN JOSE MERCURY NEWS,
MARCH 19, 1992

Having now had the opportunity to use the Turbo NeXT-station Color Computer, a 68040-based Mach workstation, has not only changed my mind, but is causing me to question whether I even want to continue having a SPARC system on my desk at all. In a word, Wow!

DAVE TAYLOR, REVIEW IN SUNWORLD,
MARCH 1992

The things NeXT users enjoy today are unfulfilled promises made by Apple, IBM, and Taligent. The computer world can be certain that NeXT will seize the next two years to deliver the best operating system on the market today to many platforms as possible. And NeXT will succeed.

RICHARD A. WYATT, LETTER TO THE EDITOR, MACWEEK,
MAY 25, 1992

NEW IN SHRINK WRAP

APRIL 1 TO JULY 1

DTP/GRAPHICS

PASTEUP
Native NeXT page-layout
program
RightBrain Software
415/326-2974

ADOBE ILLUSTRATOR 3.0.1
Maintenance release of the
illustration program
Adobe Systems
415/961-4400

SCAN-X DP-20
20-page-per-minute scanner
HSD Microcomputer U.S.
415/964-1400

SCANTASTIC FOR HP AND
NIKON LS3500 SCANNERS
Software to support these
new scanners
Second Glance
714/855-2331

CONNECTIVITY/
COMMUNICATIONS
5250VISION
IBM midrange connectivity
access to AS/400, S/34,
S/36, S/38
Conextions
508/475-5411

NEXT

BY SCOTT

One innovation that makes the graphics is its ability to merge the image in a variety of ways. In merging opaque images, NeXT Adobe's Display Post-Script for images. Since Display PostScript software, all programs on the NeXT these advanced features.

The examples below illustrate combine two images: *over*, *in* and stacks the N *over* the E, N *in* E appears in-side the outline of the hole out of the N with the outline plus N *out* E is all of N. You can in reverse: E *over* N, E *in* N, or



N over E N in



E over N E in

We've created 15 images by of the NeXT logo with the three. We've also listed the 16 operations you match each image with the instance, image 1 was created with answers below.

SHOUT

On-line conferencing, messaging
Information Technology Solutions
312/951-7462

NeXTSTEP PPP

New version supporting NeXTSTEP
interface
Morning Star Technologies
614/451-1883

LANGUAGES AND TOOLS

IMSL LIBRARIES 2.0
Fortran and C-compatible scientific
functions
Absoft Corporation
313/853-0050

eXODUS

X Window emulation
White Pine Software
603/886-9050

METROTOOLS

General utility package
Metrosoft
800/851-8665

CLIPS

ons that, pending another large
inds, we believe the stars are at
ok for \$170 million sales this
Watch NeXT's sales once the
h NeXTSTEP 3.0. The new
CT's volume up to 2500 to 3000
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GAARD, UPSIDE,
AY 1992

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GAARD, UPSIDE,
AY 1992

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a product transition similar to
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JOSE MERCURY NEWS,
CH 19, 1992

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a 68040-based Mach workstation
mind, but is causing me to ques-
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R, REVIEW IN SUNWORLD,
MARCH 1992

enjoy today are unfulfilled promise
nd Taligent. The computer world
CT will seize the next two years to
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sible. And NeXT will succeed.

LETTER TO THE EDITOR, MACWEEK,
MAY 25, 1992

NEW IN
INK WRAP

1 TO JULY 1

SCANTASTIC FOR HP AND
NIKON LS3500 SCANNERS
Software to support these
new scanners
Second Glance
714/855-2331

CONNECTIVITY/
COMMUNICATIONS
5250VISION
IBM midrange connection
access to AS/400, S/34,
S/36, S/38
Conexions
508/475-5411

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NEXT GAMES

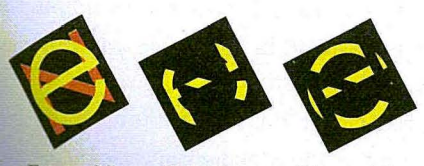
BY SCOTT KIM

One innovation that makes the NeXT a great machine for graphics is its ability to merge two images into a single composite image in a variety of ways. In addition to operations for merging opaque images, NeXT added its own extensions to Adobe's Display PostScript for merging partially transparent images. Since Display PostScript is built into the NeXT system software, all programs on the NeXT can take advantage of these advanced features.

The examples below illustrate three ways the NeXT can combine two images: *over*, *in* and *out*. For instance, *N over E* stacks the N over the E, *N in E* shows the part of the N that appears in-side the outline of the E, and *N out E* punches a hole out of the N with the outline of the E. Notice that *N in E* plus *N out E* is all of N. You can also do the same operations in reverse: *E over N*, *E in N*, or *E out N*.



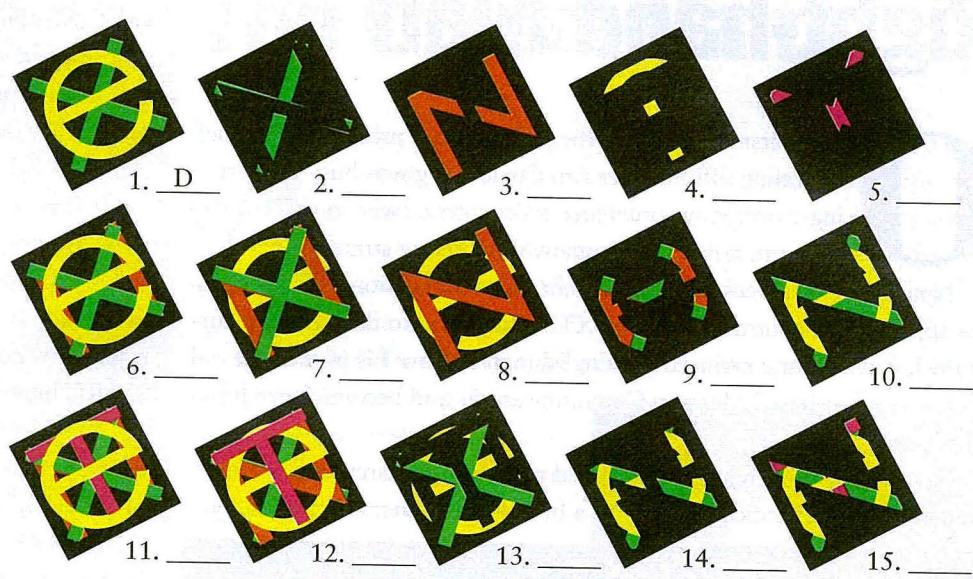
N over E N in E N out E



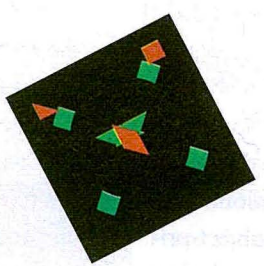
E over N E in N E out N

We've created 15 images by combining two to four letters in the NeXT logo with the three operations *over*, *in* and *out*. We've also listed the 16 operations that created them. Can you match each image with the operation that created it? For instance, image 1 was created with operation D. Check your answers below.

OPENERS



- a. T in X
- b. N out T
- c. X out N
- d. E over X
- e. E in T
- f. (E over X) in N
- g. E over X over N
- h. X over N over E
- i. (X over N) in E
- j. N over (E out X)
- k. (E over T over X) in N
- l. E over T over X over N
- m. (E over X) in N out T
- n. T over E over N over X
- o. (X out T) over (E out N)



CONTEST Write the operation that created the image at left in the blank space below. Winners receive a NeXTWORLD T-shirt. Address entries to Puzzle Editor, NeXTWORLD, 501 Second St., San Francisco CA 94107. Or fax us at 415/978-3196. And while you're at it, write us a note about the magazine. Entries must be received by July 31, 1992.

Operation: _____

- SAFETYNET
On-line conferencing, messaging
Information Technology Solutions
212/227-7462
- SAFETYNET PPP
New version supporting NeXTSTEP
interface
Shining Star Technologies
212/431-1883
- LANGUAGES AND TOOLS
MCL LIBRARIES 2.0
Macros and C-compatible scientific
functions
Macintosh Corporation
212/383-0050
- TOOLS
Macintosh emulation
White Pine Software
212/384-9050
- UTILITIES
General utility package
Macintosh
212/384-8665
- XEVENTS SOFTWARE
DEVELOPMENT KIT
X Window cross-platform commu-
nication tools
Codex
617/696-24.90
- OTPROVIDE
Link between databases and Improv
Objective Technologies
212/227-6767
- ELAN LICENSE MANAGER 2.0
Controls multiuser access to soft-
ware applications in a network
environment
Elan Computer Group
415/964-2200
- SOUND PALETTE & SELECTOR PALETTE
IB palettes for incorporating sound
and "select-from" lists in UI
RDR
703/591-8713

- DATABASE
SQLBUDDY
Tool for formatting and sending
SQL inquiries to Sybase
Objective Technologies
212/227-6767
- INFORMIX-SE RELEASE 4.1
Informix's relational database
management system
Informix Software
415/926-6300
- SOUND
DATPORT
AES/EBU digital audio I/O via
the DSP port
Ariel
908/249-2900
- PRESTO
MIDI-sequencing and DSP-synthesis
software
Pinnacle Research
602/529-1135

- UTILITIES
STYLIST
Service that copies and pastes com-
plete text styles across applications
Cube Technologies
713/778-1400
- BARCODE
Reads and writes a variety of bar-
code formats; object kit available
d'ART Software GmbH
49/40/38.02.30
- CUILLAMARTIN CALCULATOR SET
Basic, scientific, and conversion
calculators
The CuillaMartin Company
708/223-5164
- SAFETYNET
Archive software for tape or floppy
Systemix Software
410/290-8813

- MINDOVERMAIL
Utility for handling mailing labels
and envelopes
Salt Springs Technical
503/684-1416
- BUSINESS
SIMON SAYS
Voice control and macros
HSD Microcomputer U.S.
415/964-1400
- ONDUTY
Group contact manager, scheduler,
and note taker
Digital Instrumentation Technology
505/662-1459

Answers:
1. d 2. c 3. b 4. e 5. a
6. g 7. h 8. j 9. i 10. f
11. n 12. m 13. o 14. k 15. l

Right-hand Man

On his first full week on the job as NeXT president and chief operating officer, Peter van Cuylenburg was busy converting a company conference room into a “war room” to evaluate and refine the company’s marketing strategy.

Not that he disagrees with the current focus on mission-critical custom apps. On the contrary, it was NeXT’s conversion to that strategy during the last year that convinced the Englishman to leave his post as the CEO of London-based Mercury Communications and become Steve Jobs’s right-hand man.

But custom apps by itself is a limited market. To figure out how to extend the mission-critical strategy to a broader customer base, van Cuy-



Peter van Cuylenburg got off to a quick start as NeXT’s new president.

lenburg planned to roll up his Oxford shirtsleeves and sequester the best marketing minds in the company until they came up with a solution.

“I want to help NeXT get to a \$1 billion revenue based on object-oriented programming and the new market that will unlock,” he says during an interview jammed into his hectic first-week schedule.

The 43-year-old world citizen (born in England to a Royal Air Force family, he was raised in Singapore and has had previous employment stints in the United States) brings a resume in technology engineering, marketing, and management that suggests he can do it.

After graduating in 1972 with a degree in electrical engineering from Bristol Polytechnic, van Cuylenburg soon realized his real interest was in marketing and management. In 1973, he signed on with Texas Instruments (TI) United Kingdom, beginning a 16-year career with the semiconductor and electronics company that took him on a series of assignments to London, France, and Texas.

It was in Nice that he discovered personal computers, buying one of the first Apple IIs shipped to France. “I was blown away because it was the first interactive system through which individuals could dialogue with a computer,” he says.

That started his sometimes-frustrating campaign to guide TI into the personal-computer business. He led two projects to design a TI home computer, neither of which was ever produced. In 1987, after a tour at the helm of TI’s \$300 million U.K. subsidiary, he came to Austin, Texas, to head up the company’s worldwide computer business.

Inheriting a failed TI campaign to commercialize artificial intelligence

behind its Explorer workstations and LISP programming environment, van Cuylenburg had the Explorer software rewritten in UNIX and C and repositioned the product as a system for rapid development and prototyping of applications – a move very similar to the current positioning of NeXT. The development system sold well in a few vertical markets, especially the airline industry.

“This experience showed the enormous need for operational productivity as opposed to just personal productivity,” he says.

During that time, he struck a deal with Sun Microsystems for TI to design and build Sun’s next-generation SPARC chip, the Viking, which is just now coming to market. He also served a term as the chairman of SPARC International, the association of SPARC computer makers.

He might still be at TI today except for a head-hunting call in the fall of 1989. During his two years at Mercury, which is known as “the MCI of the U.K.,” revenues surged from \$400 million to \$2 billion.

NeXT’s courtship of van Cuylenburg lasted more than a year before he made up his mind to join the company. “My first conversation with Steve Jobs was about mission-critical custom apps,” he recalls. “At TI, we called it ‘operations management,’ but Steve and I realized that it was the same thing. We sat there and sketched on the whiteboard, differentiating volume markets and vertical markets.”

Van Cuylenburg was intrigued, but he wasn’t ready yet to walk away from Mercury. He turned down the offer to run NeXT’s marketing. Six months later, Jobs stopped in London to discuss a different position. This time, Steve was looking for a president. In December, van Cuylenburg agreed to join the company.

“NeXT has found the vision that will change the computer industry in the 1990s. It is the equivalent of the Mac user interface in the ’80s. I wanted to help make that happen,” says van Cuylenburg.

To accomplish that, “we need to run our own business in a mission-critical way,” he says. He plans to put in place a series of cross-functional teams to examine and improve NeXT’s business processes. One of the main products of these teams will be new information systems, mission-critical to NeXT, that will provide the underpinnings of a strong, well-managed company.

Van Cuylenburg is confident that his management style will fit easily with NeXT’s innovative corporate culture. On the inevitable comparisons with John Sculley, the president Jobs brought into Apple, van Cuylenburg says, “My background is in computers and telecommunications, so it’s easier for Steve to assess the kinds of things I will do than it might have been for him to do with Sculley.”

On this first week on the job, the primary goal is to re-examine marketing. In the war room, he has sketched a three-layered pyramid on the whiteboard. The top section is custom apps; the bottom section is the broad horizontal market. In the middle, van Cuylenburg sees an opportunity for NeXT in integrated systems and collaborative computing.

“This layer is also custom and mission-critical because each customer has unique needs and information sources. We need to crystallize and label the market,” he says.

If the war-room group can articulate a compelling message about collaboration and integration, van Cuylenburg will have accomplished something that NeXT has failed to do in several years of trying. Not bad for a first week’s work. ♦

by DAN RUBY

PHOTOGRAPH BY ROBERT MIZNER

NeXT F

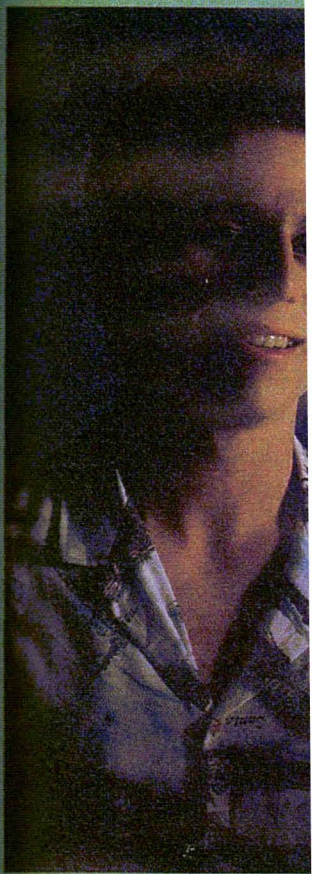
When me
24 inch
snow fe
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the 197

Year’s Day weekend, the ci
such trouble removing sno
the streets that it caused a
scandal and cost the mayor
It also sent Brendan Larson
way to a career as a weath

Now, 14 years later, La
using weather satellites, cus
software, and NeXT comp
sell personalized weather m
Chicago’s media.

“The weather here is v
changeable and the media i
petitive. It was that combin
that generated my interest i
cast meteorology,” says Lar

Predicting the weather
founded everyone from nat
American medicine men to
porary scientists. Larson’s A
Illinois-based company, We



Weatherman **Brendan**

PHOTOGRAPH BY MICHELE CLEMENT

NeXT Forecaster

When more than 24 inches of snow fell on Chicago over the 1979 New Year's Day weekend, the city had such trouble removing snow from the streets that it caused a political scandal and cost the mayor her job. It also sent Brendan Larson on his way to a career as a weatherman. Now, 14 years later, Larson is using weather satellites, custom software, and NeXT computers to sell personalized weather maps to Chicago's media.

"The weather here is very changeable and the media is competitive. It was that combination that generated my interest in broadcast meteorology," says Larson.

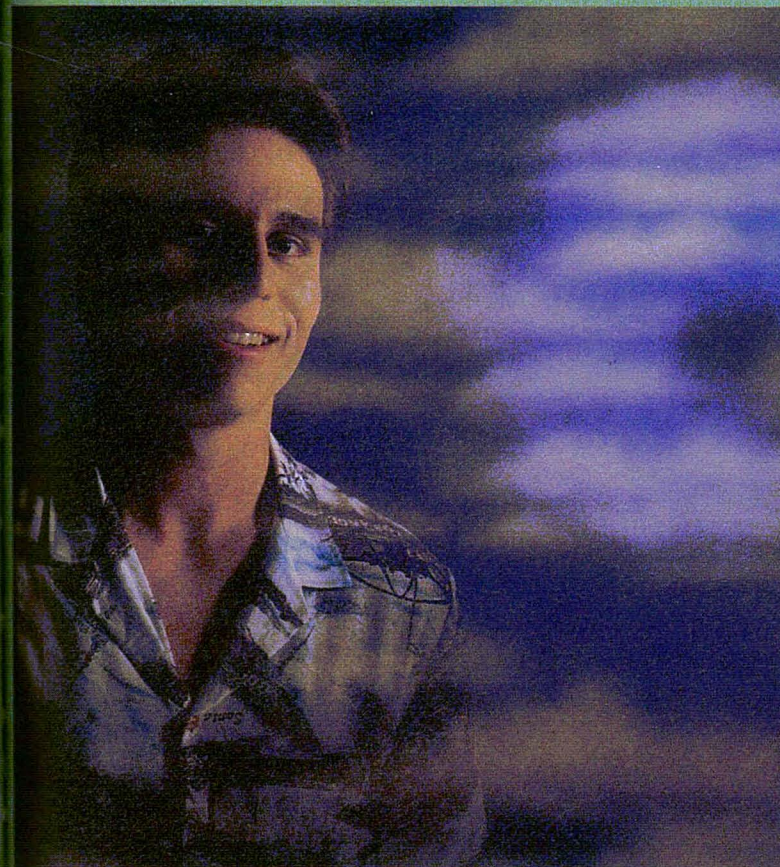
Predicting the weather has confounded everyone from native American medicine men to contemporary scientists. Larson's Aurora, Illinois-based company, Weather-

Labs, tries to solve the problem with a twist. His latest project is designed to provide weather information on demand, taking advantage of NeXTSTEP's multitasking and communications features.

"We're on the verge of doing something that no other company has done in the industry," he says. "We're going to provide live meteorologists who will answer the phone and take personalized requests for weather information."

A network of NeXT computers will continually listen to incoming data from weather satellites and assemble it into databases. From there, Larson's own custom software will pull out the data, using NeXTSTEP 3.0's DBKit, and make it accessible through a front end that is friendly enough to be used by even the most computer-illiterate meteorologist.

"Every meteorologist will be able to instantly → PAGE 12



Weatherman **Brendan Larson** knows which way the wind blows.

PHOTOGRAPH BY ROBERT MIZDOLE PHOTOGRAPH BY MICHELE CLEMENT

The Object Game

Alex Cone likes to tell people that he is an "honest-to-goodness, dyed-in-the-wool rocket scientist." These days, though, it's Cone's ten years experience developing trading systems on Wall Street, rather than his short stint designing software for NASA's Space Shuttle, that he's banking on.

As president and cofounder of Objective Technologies (OTI), Cone has become NeXT's de facto point man for custom apps. Cone has been instrumental in showing the financial giants how to slash their data-processing costs while improving their competitiveness.

"I go in and say 'Where do you spend all your money? The machines, the software, or the programmers?'" says Cone. The answer is always the same: Wages cost more than hardware and software combined.

In the world of high finance, where the ability to juggle numbers translates directly into competitive advantage, good programmers are able to command substantial salaries. If you can build the same apps in a fraction of the time or with a fraction of the staff, there's significant savings, maintains Cone. And any technology that promises to make these people five to ten times more productive gets a good, long look by senior management.

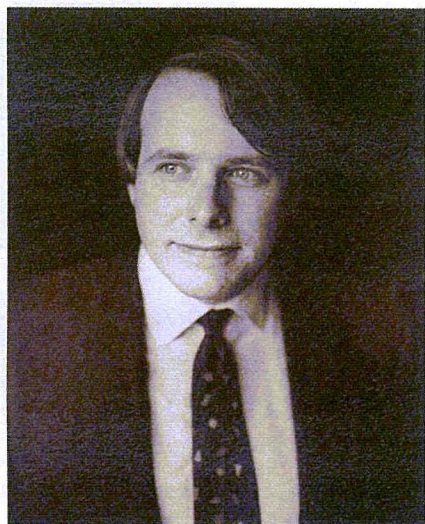
OTI hit the ground running on May 15, 1990, when Cone incorporated the company over the telephone on his way to meet with his first clients. Envisioned from the beginning, though, as a consulting-funded NeXTSTEP-product house, OTI found the going tough. After all, OTI wasn't just trying to sell itself. It also needed to sell its clients on NeXT.

"Most of NeXT's financial customers the first year were customers because we were there to help them succeed," says Cone. "We went on sales calls all over the country."

One successful sales technique was a computer bake-off. With OTI's first customer, a Wall Street trading firm, Cone lined up computers from NeXT, Digital, Sun, IBM, DataGeneral, and Hewlett-Packard. "They had all the people from various companies come in and build an application with lots of windows," recalls Cone. "The NeXT guy was done in five minutes. The DEC guy worked all through the night and still wasn't done the next morning."

While OTI's first year was spent mostly consulting, it didn't neglect its goal of producing shrinkwrapped software. Some of its first offerings were produced because clients needed products that were not commercially available, and the company did not want the expense and risk of having consultants build custom software. OTI struck deals by which the clients underwrote part of the development cost and OTI owned and marketed the resulting software.

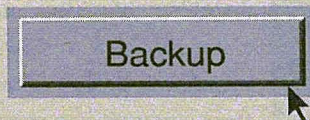
OTI's specialty was building groups of software objects that could be loaded as palettes into NeXTSTEP's Interface Builder. → PAGE 14



OTI's **Alex Cone**: Point man for custom apps

PHOTOGRAPH BY RAYMOND MEERS

Backup without getting TAR and feathered.



If you're tired of struggling with cryptic UNIX backup utilities, now you can back up the way NeXT™ intended you to – *easily and intuitively*. With a mere click of a button, *RunningBACK* brings you the first user-friendly, graphical interface tape archive software for NeXT computers.

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*Requires purchase of RunningBACK software for the Macintosh. Microtech reserves the right to change specifications without notice.

Circle 2 on reader service card

→ NeXT Forecaster

call up local, regional, and international data," says Larson. "The forecasting will be done by an intelligent agent who will take the raw numeric data and apply what I've learned for long-range forecasting and analysis. We'll build as much of our expertise into the system as possible."

Custom programming is the key, since the needs of meteorologists for raw data, processing, and presentation of weather information can't be met by off-the-shelf software.

Display PostScript is another crucial component of the system, since much of Larson's work involves producing maps and charts for newspapers, including the *Chicago Sun-Times*. He relies primarily on Adobe Illustrator and PixelMagician from B&B Software, which lets him translate Targa files to TIFF.

For broadcast-quality graphics, Larson plans to take advantage of the NeXTdimension's ability to manipulate true-color graphics in real time and output those graphics to videotape. A NeXTdimension system could replace dedicated computer-graphics systems that are in place in most television stations across the country and cost upwards of \$60,000.

"I don't have to buy separate computers that [each] do one task well, I can buy a NeXT system that does several things well," Larson says.

With an undergraduate degree in meteorology from Northern Illinois University and a minor in computer science, Larson has found a unique opportunity to combine his interests.

Besides providing vital weather information to Midwestern farmers, Larson has found himself in demand as an expert witness, making occasional court appearances. "There was one [woman] who slipped on the ice. I can say whether it was snowing or not," he says.

A weatherman down to his bones, Larson couldn't resist one final prediction.

"Once people realize they can get personalized weather forecasts, I think they'll use them quite a bit. The NeXT plays a role because we need to be able to rapidly and quickly call up that information and analyze it." ♦

by LEE SHERMAN

Keep up with the hottest computer market in the pages of NeXTWORLD. The only magazine devoted to NeXT computers.

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What's Next?

Keep up with the hottest
computer market in the
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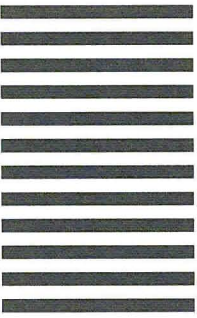
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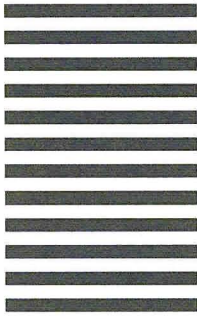


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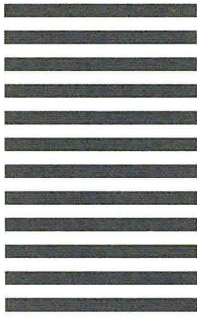


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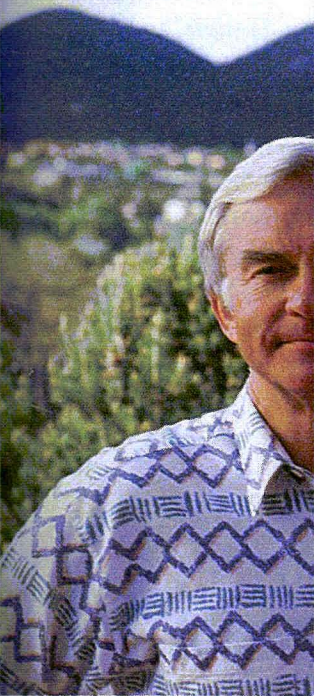
What's Next?

Find out in
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dedicated to
NeXT computers.

NeXTWORLD

Media M

Rather than let th
vision and com
industry giants
multimedia star
for the next decade, Dick Phi
decided to do something bett
Then he made it free to the p
A researcher at Los Alan
National Laboratories (LAN
since 1986, Phillips is best kn
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Dick Phillips: multi

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two-dimensional representati
data to appear as pages in a l
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One of the best things ab
MediaView is that it's free for
asking. You can pick up a co
from the Purdue University I
archive server.

MediaView goes back to
days of NeXT's version 0.8 o
ing system. Phillips had know
Steve Jobs since before the in
duction of the Apple Macint
when Phillips decided to equi
entire laboratory at the Unive

PHOTOGRAPH BY JACK PARSONS

Media Maker

Rather than let the television and computer industry giants define multimedia standards for the next decade, Dick Phillips decided to do something better. Then he made it free to the public.

A researcher at Los Alamos National Laboratories (LANL) since 1986, Phillips is best known in the NeXT community for his

of Michigan with Lisa computers. One week after the NeXTcube was unveiled, Phillips had one in his office.

Always a programmer at heart, he started to play around with the new machine. The next year he showed MediaView at Siggraph '89 as part of a special technology demonstration sponsored by NeXT. For NeXT, MediaView showed

what was possible when high-performance graphics were combined with object-oriented programming.

What Phillips didn't tell the audience about was the nonstandard, special hardware tricks and gimmicks that had been needed to display color images on the NeXT's screen. That would come later. "This was before the intro-

duction of the ND [NeXTdimension] board," he recalls. Indeed, in some ways the NeXTdimension was designed to run MediaView rather than the other way around. That's because Phillips sat on NeXT's Color Advisory Board Council, where the specifications for the NeXTdimension were formulated. "Our idea was to create a Silicon Graphics workstation on a board," he recalls.

Phillips's work with NeXT fits well with his role at Los Alamos, which he describes as "evaluating new technologies in the computer industry." Before coming to LANL, Phillips spent over two decades at the University of Michigan as a

professor of aerospace engineering and computer engineering. It was while he was working on a Ph.D. that Phillips became involved in computing, using an IBM 704 to help write his thesis on the dynamics of electric arcs. It seemed only reasonable to him to demonstrate his results with computer animation. The problem was that the year was 1964 and capabilities to create computer animation were not generally available. He circumvented that by writing data from his simulations on magnetic tape and porting it – by hand – to a hybrid analog/digital computer with limited plotting capabilities.

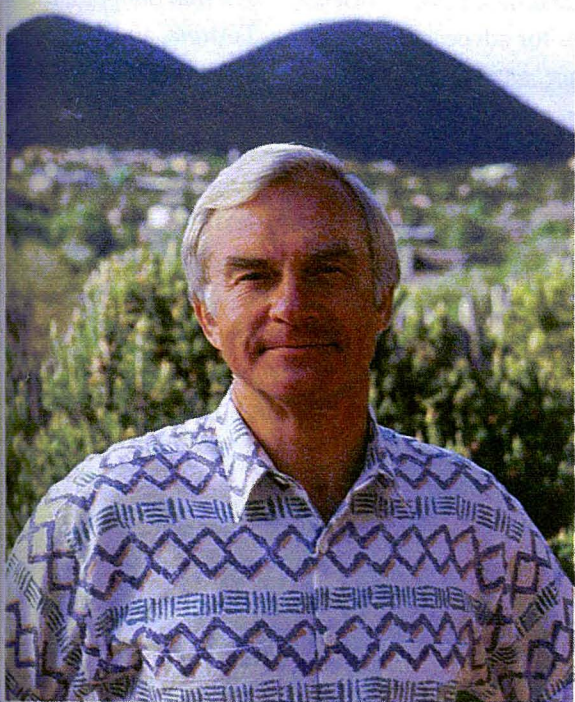
Phillips is now working on a slew of MediaView upgrades, including a set of more dynamic multimedia elements. He's also building a conversion program for MediaView, so people outside the NeXT community can view MediaView files.

MediaView is free software, it will become a significant force influencing the future of multimedia standards. He points out that many of today's UNIX "standards" became standards, in large part, because software that implemented them was freely available. Indeed, he says, creating a society of free information and resources was the original intention of the Internet.

When he's not programming, Phillips is hard at work crafting words. He's currently working on a computer-graphics textbook for undergraduates, to be published some time in the next year. When that's done, he hopes to publish a MediaView edition of it. ♦

by GREG BURD

Simson L. Garfinkel contributed to this article.



Dick Phillips: multimedia pioneer

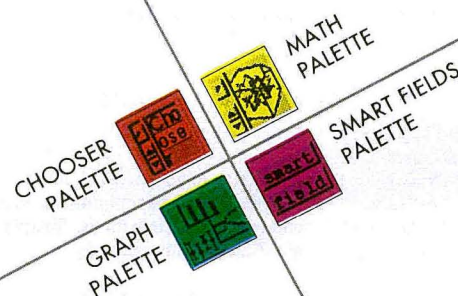
program MediaView, a system for building and browsing multimedia databases. MediaView breaks down two-dimensional representations of data to appear as pages in a book and lets users create their own path through a multimedia database.

One of the best things about MediaView is that it's free for the asking. You can pick up a copy of it from the Purdue University Internet archive server.

MediaView goes back to the days of NeXT's version 0.8 operating system. Phillips had known Steve Jobs since before the introduction of the Apple Macintosh, when Phillips decided to equip an entire laboratory at the University

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PHOTOGRAPH BY JACK PARSONS

FALL 1992 NEXTWORLD 13

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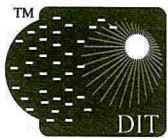
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Circle 10 on reader service card

Field Reports

Hot topics and goings-on in the NeXT user community

Threads from the Net

Splinter groups. Underscoring the continuing growth of NeXT traffic on the Net, the groups have splintered again, to eight groups. The old comp.sys.next.announce, programmer, sysadmin, and misc have been joined by groups for advocacy, hardware, marketplace, and software. Flame wars can now blaze in the advocacy group while For Sale and Want ads will go in the marketplace group. Overall traffic in the various NeXT groups is up, on average (to well over 100 messages a day), and over one recent weekend, 616 total articles were posted across all the groups: 38 percent in

misc, 16 percent in programmer, 1 to 2 percent in announce and marketplace, and 10 percent for each of the remaining groups.

Fit to print. Reading the Net is like having 50,000 friends telling you the latest news – you don't miss much. Lately, posters spotted NeXT articles or ads in the *Wall Street Journal*, *San Francisco Chronicle*, *Byte*, *MacWeek*, *Dr. Dobb's Journal*, several object-oriented software magazines, *Popular Science*, *Computer Shopper*, *IEEE Spectrum*, *Fortune*, and even *Supercomputer Review*. The new marketing slant (mission-critical custom apps) was argued back and forth, and though the new ads were declared wordy, many readers felt they were the right way to reach the intelligent readers that NeXT was targeting. The diversity of magazines now being reached and the repetition of the ads were consid-

→ The Object Game

One of its first offerings was GraphPalette, which gives programmers a simple way to put graphs into their applications. Another was MathPalette, which links custom apps with Wolfram Research's Mathematica, giving NeXTSTEP programmers a simple way for solving complicated math problems. SmartFieldPalette and ChooserPalette build upon the NeXTSTEP AppKit, giving programmers more power and options.

Once a customer buys an OTI palette, there are no additional licensing fees for using the objects to build application programs.

Now OTI has started selling some of its source code to larger customers. "I've also had people come in and say, 'How much for the hard drives?' " – meaning the company's entire library of source code, application development projects, and financial records –

jokes Eric Bergerson, OTI's managing director.

The company's newest products are OTProvide, which allows Improv users to build models based on data stored in relational databases, and SqlBuddy, an application that allows users to view and manipulate data stored in relational databases. OTI has also developed a "floating license server," to prevent software piracy, which will be incorporated into their products and which they hope to license to other NeXTSTEP developers.

Today OTI has six full-time people on staff, five of whom are programmers, and is looking to hire more. "We've been doing a lot of interviewing," says Cone. ♦

by SIMSON GARFINKEL

ered a good sign: NeXT is on the move.

Give and take. Some developers consulted directly with the community via the Net regarding starting debates on policy and exploring new options for delivery and pricing. Among interesting developments: IBM's decision to ship software for some of its apps, and Silicon Design's extremely low education prices (a trend started by Lotus house Design). This healthy give-and-forth between software deliverers and customers benefits both parties and also helps define the NeXT software market.

Lead by example. NewsGator is a simple but oft-used news reader still in limbo. Despite a growing base of support, this unsanctioned (originally written by Jayso-

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con*

Now your NeXT computer can run HP, Prime or any other hardware.

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Circle 37

C O M M U N I T Y

percent in programmer, 1
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, and 10 percent for each of
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★
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le, *Byte*, *MacWeek*, *Dr.*
Journal, several object-ori-
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Computer Shopper, *IEEE*
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ugh the new ads were
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nt readers that NeXT was
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ered a good sign: NeXT is finally
on the move.

★
Give and take. Some developers
consulted directly with their user
community via the Net recently,
starting debates on policy and
exploring new options for software
delivery and pricing. Among the
interesting developments: Right-
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for some of its apps, and Stone
Design's extremely low educational
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house Design). This healthy back-
and-forth between software
deliverers and customers benefits
both parties and also helps to
define the NeXT software market.

★
Lead by example. NewsGrazer, the
simple but oft-used news reader, is
still in limbo. Despite a groundswell
of support, this unsanctioned app
(originally written by Jayson

Adams while at NeXT) was never
officially adopted by NeXT, and it
is beginning to show signs of age.
Despite a recent bug fix (a nice ges-
ture by someone at NeXT), NeXT's
policy is still confused (despite the
official nonsupport, bug reports can
be sent to an e-mail address at
NeXT). NeXT should remember
the clever and appropriate solution
used for Backspace and make News-
Grazer an Example. This would
allow it to stay officially unsup-
ported yet make its source code
available to the community.

★
Sound offer. An unofficial offer by a
NeXT employee to supplement the
NeXT's system beeps went Net-
wide recently. Amateur sound-mak-
ers might now be immortalized in
the .snd header of a new NeXT-
STEP system beep, if their sound is
deemed worthy. This seems like an
exciting taste of the future of col-
laborative computing on a large

scale. Imagine how productive
NeXT could be if it could harness
the positive energy of the Net to
improve NeXTSTEP.

★
Basic black. Amidst the on-going
discussion about CD-ROM, some
posters complained that NeXT's
new drive lacks aesthetic correct-
ness. Without a proper NeXT logo,
and lacking any NeXT-like fins or
ribs, it just doesn't seem like a true
NeXT device. It seems that being
black isn't good enough anymore.

★
Odds and ends. One poster saw
prices for a NeXTSTEP-capable
'486 EISA (not the faster JAWS)
color system drop to around
\$3000 recently, far from the
\$10,000 some people thought
was more likely. With SuperVGA,
rudimentary NeXTSTEP may be
less expensive than we thought. . . .
More posters have been selling

NeXTcubes and NeXTstations (as
well as copies of Mathematica, per-
haps due to licensing hassles?)
recently. Many are upgrading to
new machines or unloading their
optical disk drives, yet selling prices
remain high. NeXTs are keeping
their value. . . . As interest in NeXT
ISDN grows, readers are itching to
get their hands on ISDN locally.
One reader's woeful tale of over a
year of wading through ignorance
and bureaucracy with a local oper-
ating company suggests that the
ISDN future may be more ephemer-
al than thought.

User Group News

Dutch treat. The Netherlands
group, NOW, sponsored the first
Netherlands-wide user group meet-
ing, with 200 invited guests. It took
place at Holland's largest NeXT
center, The Interpersonal Comput-
ing Group. There were presenta-
tions by NeXT Benelux, Adobe

eric Bergerson, OTI's manag-
ctor.
e company's newest prod-
: OTProvide, which allows
users to build models based
stored in relational data-
and SqlBuddy, an application
ows users to view and manip-
ata stored in relational
ses. OTI has also developed
ting license server," to pre-
ftware piracy, which will be
orated into their products
ich they hope to license to
NeXTSTEP developers.
day OTI has six full-time
on staff, five of whom are
mmers, and is looking to hire
"We've been doing a lot of
ewing," says Cone. ♦

MSON GARFINKEL

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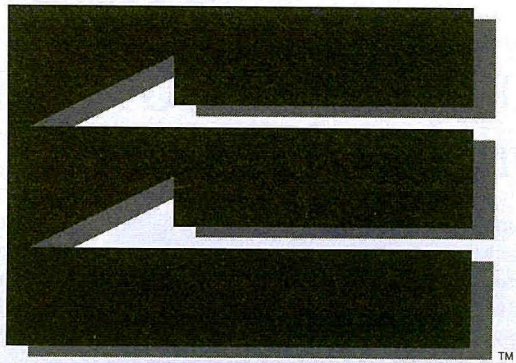
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Circle 49 on reader service card

Europe, and a showing of the NeXT-WORLD Expo keynote video.



Vendor support. GUN (New York) has secured corporate sponsorship from five companies that have responded with equipment, time, and money. Working with Marble Associates, GUN is offering its members SLIP connectivity to the Internet. It is also building gateways to other groups, like RMNUG (Denver), that offer their members similar services.



Virtual groups. Some user groups

based on interest areas instead of geographical areas exist only on-line. To subscribe to the Science NeXT User Group (SNUG), e-mail to snug-requests@whitewater.kim.wisc.edu. A group called NeXT Icons has the inquiry address next-icon-request@bmt.gun.com. With the introduction of lots of new music hardware and software, there has been a great resurgence of interest in the long-standing on-line group for musicians. For information write nextmusic-request@wri.com. There is now a special mail group to get announcements about the NeXT in the United Kingdom. The address to request this service

is uk-next-announce-request@asmec.co.uk



Help for editors. A newsletter wire service, called nextwire, collects articles, reviews, artwork, and anything NeXT-related into an on-line repository for all the NeXT user groups around the world to draw upon when creating newsletters for their members. Already beginning to fill up, nextwire's archives should spread some of the enthusiasm and knowledge on the Net to those not directly connected. Contact Shawn Broderick at nextwire@mit.edu for more details.



Bandwagon. A sampling of new groups includes Singapore, led by Paul Wang; Huntsville, Alabama, led by Daniel Green; and the Atlanta Commercial User Group, headed by Ram Madabushi. There are now 333 user groups in 46 states, 9 Canadian provinces, and 34 countries, totalling approximately 15,000 members worldwide. ♦

by CHARLES L. PERKINS & DAN LAVIN

NEXTWORLD

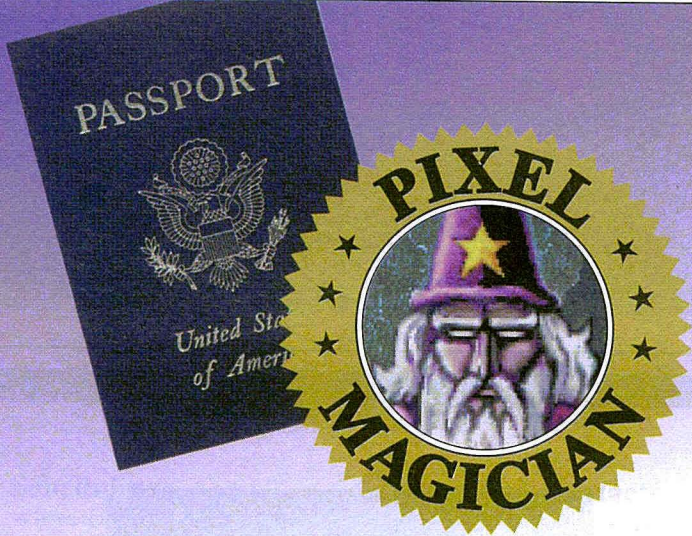
NEWS IN BRIEF

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33 user groups in 46 states,
Indian provinces, and 34
ies, totalling approximately
) members worldwide. ♦

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NEXTWORLD

EXTRA

JULY 1992

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NeXT foresees 3.0 shipment in August

by DAN RUBY

Redwood City, CA - NeXTSTEP 3.0 entered a second beta-test cycle in late June while NeXT acknowledged that the final release date has slipped to August or even later.

Until late May, NeXT had claimed that 3.0 would make its promised ship date before the end of the second [SEE 3.0 SLIPS, PAGE 20]

**Anticipation running
high for NeXTSTEP 3.0**
See stories, next page

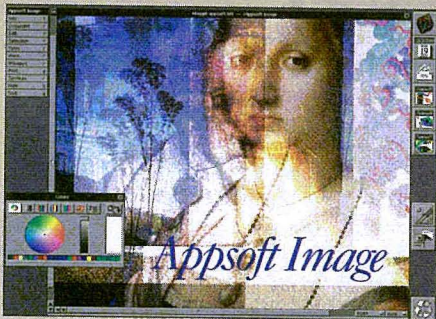
Image fills in color picture

by RICK
REYNOLDS

Redwood City, CA - Riding high on positive user acceptance of its Draw program released in May, Appsoft plans to ship Image, the first commercially released color photo-editing software package for the NeXT.

Scheduled to ship in late September, the long-awaited Image is a full-featured 24-bit-color image-editing package with a complete set of Adobe Photoshop-class image-manipulation tools. Like Photoshop, Image will serve three interrelated purposes as a photo-editing tool, a complete paint package, and a graphics file-conversion utility.

Appsoft Image ships with a selection of filters that allows users to apply such special effects as sharpening and softening, but the program also will be user-extensible and accept additional filters. Image files will be internally pre-separated and ready for desktop



Image, a full-featured 24-bit-color image-editing package, has a complete set of Photoshop-like manipulation tools.

color separation and output to a high-resolution imagesetter.

Although the program was developed to meet the needs of publishing [SEE IMAGE, PAGE 20]

NeXT negotiating with OMG

by CLAIR WHITMER

San Francisco - In advance of the ObjectWorld conference meeting here this month, NeXT was negotiating to join the Object Management Group, the industry consortium, according to sources.

by DAN RUBY and
DAN LAVIN

Redwood City, CA - Shock waves rolled through NeXT headquarters here last month when company co-founder Bud Tribble resigned to take a high-level position at rival Sun Microsystems and several other NeXT executives were forced out.

When the smoke cleared, three vice-presidents were gone, five fewer people were on NeXT's decision-making policy team, and several director-level positions were left vacant. Two other vice-presidents had previously left the company this year.

Except for Tribble's surprise defection, most of the moves

Heads roll at NeXT

Policy-team lineup: Who's in, who's out

Steve Jobs, CEO
Peter van Cuylenburg
president, COO
Marcel Gani, CFO
Todd Rulon-Miller
VP of sales

In

Rich Page
GM of hardware
Mike Slade
VP of marketing
Paul Vais
VP of Europe

Theo Wegbrans
VP of Europe
Max Henry
VP of Asia
Phil Wilson
VP of human resources
Gary Moore
VP law

Out

Bud Tribble
VP of software
Jerry Knight*
controller
Matt Medieros*
director of manufacturing
Leo Hurwitz*
director of software

Key: blue = still on team; orange = resigned; red = fired; green = removed from team.
* Non-voting member.

were engineered by new NeXT President Peter van Cuylenburg, according to a source inside the company. "NeXT was built on the model of a very large computer company," the source said. "Van Cuylenburg is downsizing the operation."

The wholesale management changes included resignations by Max Henry, vice-president of Asia; and Phil Wilson, vice-president of human resources.

Gary Moore, vice-president of law, will complete his planned resignation by July 1. Almost lost in the shuffle was the resignation of Ron Lang, director of software product marketing.

James Higa, former country manager for Japan, will assume Henry's Asian responsibilities while remaining as a director. Paul Bianchi was appointed acting director of human resources.

Trib- [SEE TRIBBLE, NEXT PAGE]

Canon adds new funding

by DAN LAVIN

Redwood City, CA - NeXT recently received an infusion of at least \$25 million in additional financing from Tokyo-based Canon, according to sources close to NeXT. The company declined to comment on the reports, standing by its customary statement that NeXT would never fail

for lack of funds.

In the past few months, Steve Jobs and new President Peter van Cuylenburg have approached a number of potential investors, including existing backers such as Canon, as well as new prospects in the United States and Europe, sources said. The new Canon deal evidently was sealed in the last week of May during a trip by van Cuylenburg to Tokyo.

A large intermediate round of financing before going public, called "mezzanine funding," is not unusual. According to Bruce Lupatkin, managing director of technology research for investment bank Hambrecht & Quist of San Francisco, "There is no normal progression in the life of these young companies. It is not uncommon to have a number of starts and [SEE FUNDING, NEXT PAGE]

N e X T S T E P 3 . 0

Managers test 3.0

by SIMSON L. GARFINKEL

System managers at more than 100 customer sites are awaiting a more stable version of NeXTSTEP 3.0 before using it for production work. A second beta of the operating system upgrade was released in late June.

While the first beta was fairly solid, users reported performance problems, occasional crashes, and several bugs that prevent some 2.1 applications from functioning properly.

Alex Henry, manager of information services for the William Morris Company, in Los Angeles, is eager to deploy 3.0 because of DBKit, which is the basis for several custom applications William Morris is having developed. "We've got about four or five machines running 3.0. I expect a second CD-ROM release of the software, and depending on how stable it is, we might give it to another 20 to 30 people."

Nearly all the 3.0 features promised by Steve Jobs at NeXTWORLD Expo '91 – NeXTlinks, AppleTalk connec-

tivity, Macintosh floppy disk support, and Novell file sharing – are functional on the beta. Only the much-touted mail encryption is missing; the U.S. government would not allow NeXT to export a CD-ROM containing encryption software.

Some NeXT developers find they are faced with a dilemma: There are great new features to exploit, but "if you develop under 3.0, your application won't run under 2.1," said Charles Fu, a programmer at Bäckhus Software of Santa Monica, California.

That's a blow to Bäckhus, which wants to use 3.0's filter feature in its program for converting images between file formats. Moving to 3.0 now means having to forgo sales of the new version until NeXT ships the final release.

Another problem, said Fu, is that 3.0's documentation "is not as extensive as it needs to be." Many documentation directories on the beta CD-ROM are blank or contain only outlines.

Bill Southworth, director of

visualization products for Kendall Square Research, a Boston-area maker of supercomputers, is willing to wait it out, because "I don't see anything that is sufficiently a work stopper that I would rush off [and upgrade] before it is ready."

Southworth is counting on 3.0 to provide connectivity between Macintosh and NeXT computers. "It's clearly going to be there. But it's not production-worthy yet." ♦

3.0 CD-ROM: A wealth of applications, demos, samples, and documentation

The NeXTSTEP 3.0 beta release contains 345MB of information, leaving a roomy 184MB of free space on the CD-ROM. The mammoth space afforded by the CD-ROM means that NeXT has been able to load a variety of new applications and documentation that might have been missing if the company were forced to make the entire release fit onto the NeXTcube's 256MB optical disk.

The /NextLibrary directory now contains a whopping 98MB of data, including 23MB of developer documentation. There are new developer applications and demonstration programs.

System administrators will be pleased to see a host of new applications for handling the new PhoneKit, as well as Macintosh and Novell NetWare connectivity. Most of the 2.1 applications have been revised and simplified for 3.0. Look to SimpleNetworkStarter for one-button installation of new clients and servers.

But despite the changes, new 3.0 users will still be greeted by Steve Jobs's infamous "Welcome to the NeXT World" message of November 1, 1990, and its outdated message emphasizing interpersonal computing.

— by SIMSON L. GARFINKEL

Developers contemplate 3.0 features

by LEE SHERMAN

Application support for the rich new features of NeXTSTEP 3.0 – including DBKit, information linking, and communications and graphics tools – may be stronger than for other vendors' operating system upgrades.

Unlike Apple Computer's System 7.0, some important features of which have been used by only a handful of programs, Gordon Van Huizen of San Diego-based Metrosoft believes there will be many 3.0-enhanced applications because it's much easier to add new features in NeXT's object-oriented environment.

"The way [NeXT has] implemented everything is so streamlined that I predict that we're going to see applications arrive very shortly after the 3.0 release that take advantage of the new features," said Van Huizen, a longtime Macintosh

developer now committed to the NeXT.

Glenn Reid of Palo Alto, California-based RightBrain Software expressed skepticism over some of the proposed advantages of 3.0. "I think sometimes people invent solutions to problems that don't exist. I have yet to encounter a situation where I need live updating."

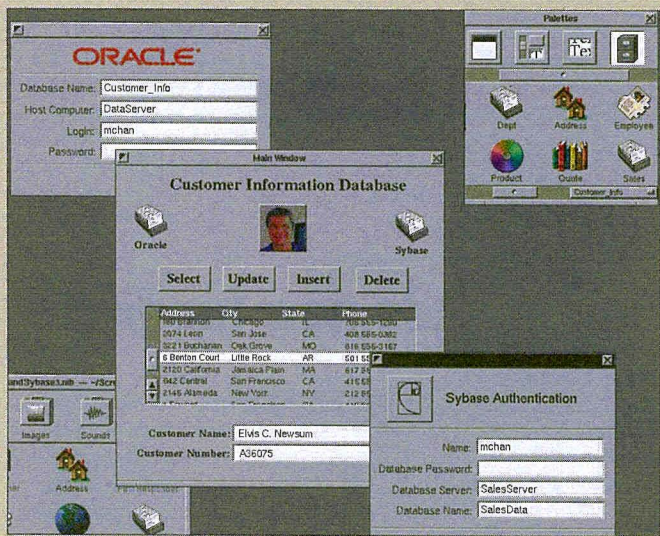
Although Reid applauds NeXT's approach, he argues with some choices the company has made in allocating its limited resources. "The kind of things that the PhoneKit is predicated on aren't really pervasive in the United States. You can't get ISDN where I live. What good does it do me to have it on my computer?"

Reid, who is developing a page-layout application, admits his personal bias toward 3.0 features like support for Pantone Matching System, PostScript Level 2, and AppleTalk connec-

tivity. "I think they're great for developers, and they significantly enhance the value to end users for publishing," he said. "You can't necessarily take advantage of these things the day it ships, but it provides the foundation."

Despite praise for 3.0, some developers still are not ready to make the commitment to the NeXT. Aldus Corporation Fellow Mike Templeman calls the new release "a dramatic advance" over anything he's seen. "Two years ago I thought the machine was dead, but as soon as they dropped the '030 and the optical disk, I became interested again."

But while Templeman believes improved connectivity, as well as support for professional-level color and Pixar's RenderMan, put NeXT ahead as a publishing environment, it will still be some time before users see PageMaker on the NeXT. ♦



DBKit is among the most anxiously awaited features of NeXTSTEP 3.0.

Tribble [FROM PREVIOUS PAGE] ble's move to SunSoft, the software division of the company NeXT CEO Steve Jobs describes as "the mother of all competitors," left many at NeXT in a daze. As one of NeXT's six founders, Tribble had access to nearly every NeXT secret. Tribble becomes vice-president of end-user software at SunSoft, managing the segment of Sun's Solaris operating system in direct competition with NeXTSTEP.

"It is always sad to lose a founder of a company, and Bud is also a close personal friend," said Jobs in a prepared statement. "Bud has been a good software ambassador to our customers and the outside world. However, he was on a leave of absence for four of the past nine months and has not been the driving force behind NeXTSTEP for some time."

The company would not comment about the vulnerability

of trade secrets held by Tribble. Ironically, NeXT spent the first year of its existence embroiled in lawsuits from Apple Computer over trade-secret issues involving NeXT's original employees, including Tribble. He and his wife, company co-founder Susan Kelly Barnes, together hold almost 3 percent of NeXT stock.

According to sources at NeXT, Tribble was bitter about being passed over for the newly

created position of general manager for the Software Division. Tribble reportedly was slated to have been appointed NeXT's chief technical officer when the software position was filled, but that hasn't happened yet.

Among the impacts of the changes, NeXT's policy team is now smaller. In addition to fewer vice-presidents, several director-level non-voting members were removed from the team. ♦

Funding [FROM PREVIOUS PAGE] stops in funding and profits."

Speaking of NeXT specifically, Lupatkin said, "Because Jobs is trying to build a complete computer-systems company including both hardware and software, they need tremendous amounts of capital."

It is unclear what Canon received in return for its new investment, since sources said there has been no change in equity, or ownership, of the company. ♦

NeXT clamp vendor use o

by CLAIR WHITMER

Redwood City, CA – Holding firm on its policy of not allowing third parties to use the NeXT name without a license, NeXT Computer recently warned two companies to drop "NeXT" from their names: NeXTWarehouse and ClubNeXT.

NeXT's policy is that third parties cannot use "NeXT" as part of their company or product names because NeXT wants to protect the identity of its products.

NeXT has made only three exceptions to its anti-licensing rule: NeXTWORLD magazine, NeXTWatch newsletter, and NeXTConnection.

Since NeXTConnection competes with companies such as ClubNeXT, NeXT is open to complaints of giving NeXTConnection an unfair advantage. NeXT granted NeXTConnection its license in 1990. "Because they were so unique, Jobs allowed them to do that. It may have been a mistake," said Karen Steele, marketing communications manager.

Now NeXT has decided against making more exceptions.

ClubNeXT, owned by the same company as ClubMac, sells hard drives and color scanners for NeXT machines and ran an ad using the name in the Summer issue of NeXTWORLD. NeXT

Presto conjui

by LEE SHERMAN

Tucson, AZ – Musicians' wishes finally have come true with the release of the first MIDI sequencing software for the NeXT.

Presto from Pinnacle Research, based here, combines MIDI sequencing with DSP (digital signal processing) synthesis, allowing users to record and play music either with MIDI-equipped keyboards or by using the built-in sound-generation capabilities of the NeXT.

Presto lets users apply musical sleight of hand, such as transposing keys, adjusting time signatures, or changing instruments. A "humanize" feature allows users to introduce randomness into a composition, avoiding the robotic feel

Applications, Documentation

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SIMSON L. GARFINKEL

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NeXT clamps down on vendor use of NeXT name

by CLAIR WHITMER

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sent a letter telling ClubNeXT not to advertise any more with that name.

ClubNeXT owner Mike McNeill said he will drop the ClubNeXT logo from future ads. But the company still was functioning as ClubNeXT in early June.

NeXT also has filed opposition proceedings with the U.S. Patents

While it won't license the word "NeXT" to developers, the company wants its third parties to freely use its promotional logo.

runs on NeXTSTEP

and Trademarks Office to strike the trademark registration for NeXTWarehouse. The trademark had been applied for by peripheral-reseller firm MicroWarehouse.

MicroWarehouse is disputing NeXT's argument, claiming that the name NeXTWarehouse wouldn't confuse the public.

"Customers would fully understand in all instances that they were purchasing products that were NeXT-compatible from a party other than NeXT Computer," said Arthur Jacobs, MicroWarehouse legal counsel.

To address developers' problem of associating their products with the NeXT machine, NeXT has designed and freely licenses the "Runs on NeXTSTEP" logo.

But that doesn't help with naming a company or product. NeXT recommended the nickname "Cube" for a while, but the moniker has become obsolete. ♦

Presto conjures MIDI magic on the NeXT

by LEE SHERMAN

Tucson, AZ – Musicians' wishes finally have come true with the release of the first MIDI sequencing software for the NeXT.

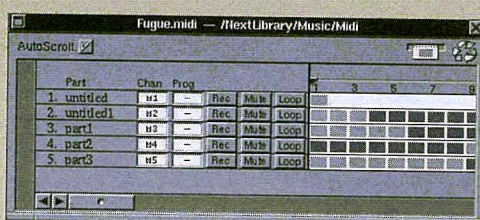
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Presto lets users apply musical sleight of hand, such as transposing keys, adjusting time signatures, or changing instruments. A "humanize" feature allows users to introduce randomness into a composition, avoiding the robotic feel

found in some computer music.

The program combines expected features like these with innovations made possible by the NeXT environment. Presto's graphical interface allows measures to be moved, copied, inserted, or merged, simply by dragging and dropping them within sections of a musical score or between scores. Presto even includes a measure dispenser similar to that found in Lotus Improv, as well as a recycler for disposing of unwanted musical passages.

The program's capability to read and write standard MIDI



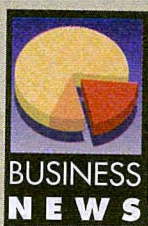
Presto's Score window has a measure dispenser for adding blank parts to a score, and a recycler for disposing unwanted ones.

files, as well as NeXT Score and Playscore files, makes it possible for NeXT users to participate in the greater world of MIDI.

Presto Version 0.9b is available at an introductory price of \$149, with a free upgrade to Version 1.0 when released. Pinnacle Research can be reached at 602/529-1135; e-mail: info@pri.com. ♦

German dealers rise up

by DAN LAVIN



Munich, Germany – NeXT acceded to the demands of its dealers with a sweeping reor-

ganization of its operations in Germany, considered the company's strongest international market.

The only organization to remain untouched by NeXT's streamlining of its European operations in March, NeXT Germany was slated to expand as NeXT began selling directly to customers. But last month, distribution was shifted back to NeXT's existing dealer network. All distribution and sales countrywide will now go through two major distributors in Germany and one in Austria: D'art, of Hamburg; DCS, in a suburb of Stuttgart; and Hard and Soft in Austria.

In addition, nine NeXT employees were laid off, including Country Manager Helmut Blanc. Michael Gobrans, formerly of NeXT distributor AMG, was named new director of sales and marketing for Germany.

According to Paul Vais, vice-president of NeXT Europe, "We couldn't have anybody who was not mission-critical." Vais plans to staff the German office with people with strong technical knowledge who can provide marketing and sales support for the dealer network. Vais would not rule out selling some machines direct.

The new organization was rolled out at a dealer meeting in Frankfurt on June 2, attended by representatives from 50 dealerships. While most dealers were happy with the new plan, which includes stringent dealer qualification standards, others were unhappy that they are forced to buy through distributors instead

of directly from NeXT.

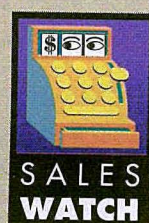
After a seemingly strong calendar year in 1991, NeXT Germany's returns and slow sales in advance of the major CeBIT computer show made for a dismal 1992 first quarter. The period after CeBIT, likened to the Christmas season for German computer dealers, was ruined because NeXT had begun cutting existing dealers out of the sales loop at a time when NeXT had few direct-sales staff to implement the new strategy. Both NeXT Germany and its dealers experienced immense losses.

AMG, one of the big distributors, ceased NeXT distribution.

The major distributors said they would abandon the NeXT marketplace if changes were not made, sources said. After some negotiations, NeXT installed Gobrans, an ally of the distributors, as the effective country manager and made concessions on logistics, credit terms, and discount structure, in effect, adopting the dealers' proposed business plan. "We weren't prepared to take advantage of the market," said Vais.

A German source related the reversal in policy to other changes instituted by NeXT President Peter van Cuylenburg. "He's shifting NeXT's business in the right direction," the source said. ♦

HR firm leads NeXT sales list



Organization Resources Counselors (ORC), an international management and human-resources consulting firm

that works with Fortune 500 companies, recently purchased 35 NeXTstation Turbos for its New York headquarters.

The machines will act as front ends to IBM RS/6000 servers.

ORC plans to buy up to 90 more workstations for its other offices.

NeXT's other Big Apple score was with Global Finance North America, a subsidiary of Citicorp bank. Forty machines will be used to develop trading-systems support.

NeXT reportedly is also close to announcing a 100-machine deal with financial giant J.P. Morgan. ♦

B R I E F S
C o n t i n u e d

Digital Tool Works, a start-up company formed by two MIT graduates, previewed its EquationBuilder at the 1992 Mathematica Conference. Due in the third quarter, EquationBuilder makes it easy to draw professional-looking mathematical equations and formulas. It will output equations in Encapsulated PostScript, TeX, or Mathematica notation, as well as re-import an EPS or TeX file for further editing. Pricing hasn't been determined. Digital Tools Works can be reached at 617/742-4057; e-mail: lexcubeleqb@bu.edu.

Neuron, the beleaguered modem manufacturer, remained closed for a second month. Creditors and customers seeking product delivery and technical support were advised by phone message that the company would remain closed until June 22.

Altsys claims to finally have a handle on its illustration program, Virtuoso. Originally slated for the first quarter of 1992, it will ship in September for \$695. Added features caused the delay of the much-anticipated program, but not even Steve Jobs gets a peek before the end of July. Altsys can be reached at 214/680-2060.

The Delahaye Group of Hampton Falls, New Hampshire, found in a recent study that Sun Microsystems is the most visible company in the object-oriented market, with NeXT placing second in amount of press coverage. The study said, however, that Steve Jobs is as much a spokesperson for object-oriented technology as the president of OMG, Christopher Stone.

NeXTWORLD Extra is a supplement of *NeXTWORLD* magazine. It is published monthly by Integrated Media, a subsidiary of IDG Communications, 501 Second St., San Francisco, CA 94107, and is distributed free to subscribers of *NeXTWORLD*. Lt. Sullivan's column and articles about unannounced NeXT products are reported and written by contributors without guidance from the *NeXTWORLD* staff.

Editor: Dan Ruby; Managing Editor: Connie Guglielmo; News Editor: Dan Lavin; Staff Writer: Simson L. Garfinkel; Layout Chief: Sue Troy; Copy Editor: Eliot Bergson

ObjectWorld

[FROM PAGE 17]

ty is the most vital in the industry, NeXT released the Object Solutions Guide, a catalog of about 30 commercial and 25 public-domain objects available for NeXTSTEP. NeXT also recently appointed Liz Statmore to the newly created position of manager of object marketing.

"[ObjectWorld] will be a very visible effort on our part," said Scott Love, developer advocate.

Established in 1989, OMG is a consortium dedicated to creating standards for code portability and interoperability among object-oriented environments. Its main achievement is a standardized interface between distributed objects in heterogeneous environments, called the Common Object Request Broker Architecture (CORBA). OMG also developed an Object Model, which defines the form and attributes of objects.

At press time, NeXT would not talk about its relationship with OMG, but sources say that membership would allow NeXT to make a permanent contribution to OMG's work on definition of object services, without necessarily indicating a commitment to OMG's existing standards.

Without commenting on NeXT's intentions, OS Product Manager Kevin Wells said technical solutions to integrating NeXTSTEP with existing OMG interoperability standards "aren't really that difficult."

NeXT has been one of the only major systems vendors not to have joined OMG. "This will give them the semblance of being in the mainstream," said Steve McClure, senior consultant for new-software technologies at market research firm International Data Corporation of Framingham, Massachusetts.

In contrast, NeXT competitor SunSoft has been a leading OMG player. As part of its Project DOE (Distributed Objects Everywhere), SunSoft will release a developer version of its implementation of CORBA later this year. With NeXT co-founder Bud Tribble at the head of SunSoft's effort now, Project DOE is being groomed as NeXTSTEP's nemesis.

"NeXT has shown what an object system could look like. I question their ability to scale that up to a fully distributed object system," said Steve Martino, OMG board member and SunSoft's director of product marketing for objects. ♦

3.0 slips

[FROM PAGE 17]

quarter, which ended June 30. In May, NeXT engineers concluded that a second beta round beginning June 22 was necessary to ship a polished product. Delays of several months or more are not unusual for major operating system updates from NeXT and other system developers.

According to Mike Slade, NeXT's vice-president of marketing, "If all goes as expected, we'll ship in August. But with software, there is always the chance of September."

"We have some killer technology that we want to incorporate in LiveWire after 3.0 ships, but I would rather see a mature product later than a buggy one soon," said William Adams, chief tech-

nologist for Adamation, of Oakland, California.

But other testers said the first beta version seemed surprisingly solid. "There's not a single app I've tried that doesn't work properly," said Glenn Reid, president of RightBrain Software, of Palo Alto, California.

The delay also pushes back the release of NeXTSTEP '486, which NeXT has always said would follow 3.0's release by about three months. According to Slade, NeXT will take advantage of the additional time to make the '486 product available on a wider array of configurations. The company may also include full DOS/Windows compatibility, which would otherwise have waited for an interim release. ♦

Image

[FROM PAGE 17]

professionals, Image's interface has been designed to accommodate general users as well.

This first release includes full support for advanced features of NeXTSTEP 3.0, but is not "3.0-dependent." Image does not follow the example of industry leader Photoshop, which has extensible Acquire and Export functions via plug-in modules. Instead,

NeXTSTEP Services integrate Image with various image-acquisition options, then easily move the images out again to other programs.

Appsoft had not set pricing for the program at press time. Image will ship later this year in German; other foreign-language versions are planned. A version for NeXTSTEP '486 will be available later. ♦

Tribble defection recalls good old days

Lt. Sullivan got his first glimmer of the pending shakeup in NeXT's executive ranks while schmoozing with the Redwood City elite at William Parkhurst's recent wedding in Waimea Falls, Hawaii. The custom vows were moving, and the traditional Hawaiian singers were a nice touch, but the conversation was charged. For one, with most of the top software guys in attendance, where was their fearless leader Bud Tribble?

The truth came out with the sushi at the reception. Only weeks before, all the top software engineers had gathered off-site to discuss the management of NeXT's new Software Division. When it got down to bare knuckles, they voted "no confidence" on Tribble for general manager. Still, no one expected the NeXT founder to go over the wall to archenemy Sun. Shades of the Bolshoi Ballet or Moscow Circus.

The always charming Max Henry was even less scrutable than usual, which Sully chalked up to his current tour as VP for Asia. Now NeXT's friendliest face is gone, too — victim to the downsizing campaign of Peter van Cuylenburg. Then the Lieutenant chatted with Bryan Yamamoto (author of Mail) and Jean-Marie Hullot (Workspace Manager), remarking on the distance they had traveled from Paris to attend the affair. It developed that this would be one of their last global hops, since another of van Cuylenburg's house-cleaning moves involves pulling the whole French engineering team back to California.

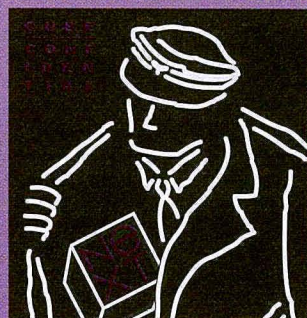
Puzzled, Sullivan returned east by way of Cabo San Lucas in Baja California, where he rendezvoused with two recuperating former NeXT-lings, Keith Ohlfs and Jayson Adams. Neither was much for tequila (Sully made up for them by downing boat-sized margaritas), but still the stories flowed. Keith couldn't confirm the rumors that Steve Jobs was so angry at his departure that he had Keith's name removed from all the application icons he had developed.

Tequila or not, Jayson's lips loosened enough for Sullivan to glean a few details about Atherton Software's forthcoming scrapbook application. It sounds like the free-form database will be a great place for the Lieutenant to organize his voluminous mail and news files as well as maintain his sometimes unmanageable to-do lists. NeXT users will get their first look at it in late fall.

Fall, of course, is shaping up as the season of NeXT publishing and graphics. PasteUp is looking very good, and Sullivan expects RightBrain to achieve 10 percent market penetration by this October's Seybold Conference, where Version 2.0 will likely be announced. Symbolic of a fruitful company, congratulations are in order on the birth of Jack Reynolds III.

Pages is moving more cautiously as the release dates for PageOne and PageTwo have slipped with the decision to add more functionality. The new strategy means that PageOne and PageTwo will break new ground in the areas of user interface and full support for NeXTSTEP 3.0. Another new product, code-named Tsunami, has been added to the previous two applications in progress.

Lt. Sullivan



NeXT and Novell remain in close contact these days with offers of assistance from Novell for the Intel port. NeXT machines have arrived at Univel and were met with a surprisingly warm reception. On the other hand, you can discount those stories in a Macintosh weekly about a deal in the works between NeXT and Microsoft. It probably started as an April Fools' joke, and Mac the Knife fell for it.

The L.A. County Sheriff's Department has had its hands full of late. Integrator Booz Allen Hamilton is out of the picture, since the department feels it botched the job as badly as the cross-town L.A.P.D. botched the recent days of rage. The Booz technology partner Adamation remains in consideration for the 43 custom applications scheduled.

Adamation was in the fast lane as Stephen Adams snared top honors in the Stanford MBA/Entrepreneur Car Rally. The scavenger hunt/road race pit teams of famous entrepreneurs with Stanford MBA students for fun lessons in the real-life game of business in Silicon Valley. Chatting with second-place winner Scott McNealy of Sun Microsystems after the barbecue, Adams had a long and frank conversation about the UNIX workstation industry, the NeXT platform, and other matters. Sullivan hears that business cards were exchanged.

Hey, no more defections, boys. Or if you do, at least spill the beans before going into hiding. What could be more fashionable than a Steve-signed Sullivan T-shirt for your first day on the new job? LiveWire will toss in a copy of its new game, OilSlick, as a bonus. Call Lt. Sullivan's voice mail at 415/978-3374, or send him e-mail at sullivan@nextworld.com.

D

"Dataphile is the
a great hole an
PC or workstat
— Steven
NeXTWorld Ex

"One awesome applica
— Eric Thayer
Program

"Geez, it's really 2am
working about 6 hours
now. The new version
DataPhile you gave me
Washington is a little
cool. Every now and
jump up out of my chair
bounce around the room
chanting, 'This is why
NeXT! This is why I b
NeXT!'"

— John
Kentucky NeXT (

"The more I work with
the more I like it."

— John Bart
Workgroup Produc

DataPhile is the premier
database on the NeXT
self-contained and rea
it requires no expensive
servers or support
fees. \$695

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ut the UNIX workstation industry,
n hears that business cards were

u do, at least spill the beans
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the new job? LiveWare will toss
mus. Call Lt. Sullivan's voice
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— Steven P. Jobs
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— Eric Thayer, Research
Programmer CMU

"Geez, it's really 2am. I've been
working about 6 hours straight
now. The new version of
DataPhile you gave me in
Washington is a little bit too
cool. Every now and then, I just
jump up out of my chair and
bounce around the room
chanting, 'This is why I bought a
NeXT! This is why I bought a
NeXT!'"

— John Coppinger,
Kentucky NeXT Users Group

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— John Bartley, Partner
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Create is a program that lets
you easily create darn good
artwork and graphics — even
if you aren't an experienced
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— Jiro Nakamura,
NeXTwatchTM Newsletter

"This program is FANTASTIC!
What a GEM that has been
hiding!!!"

— 'Captain' Andrew Foster

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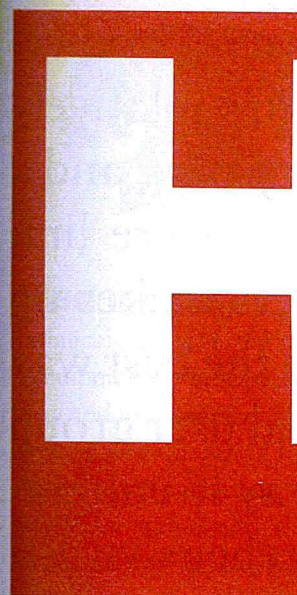
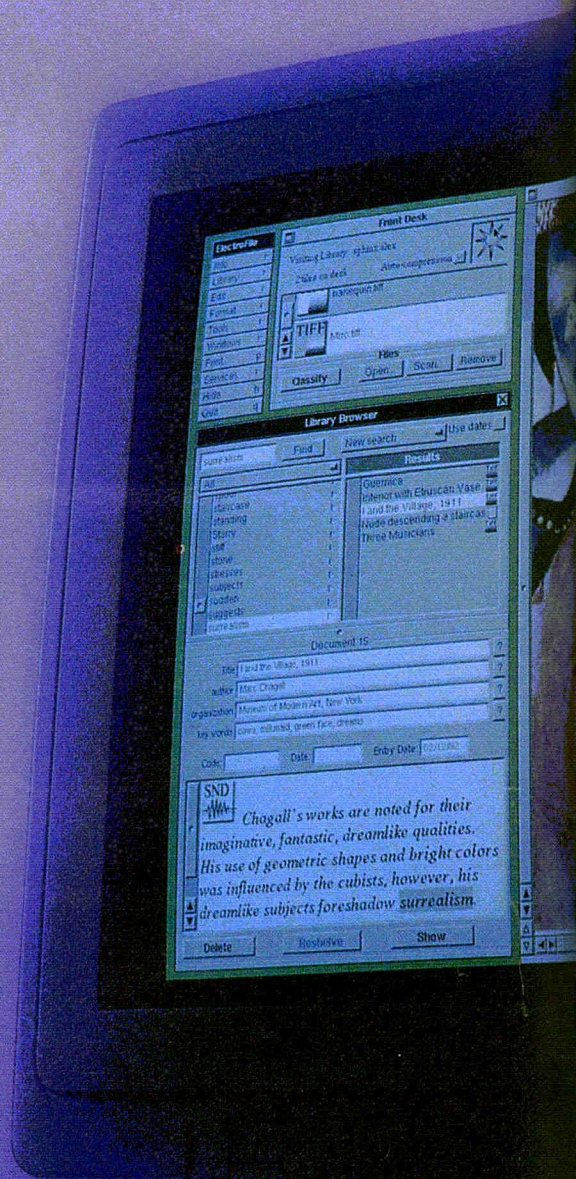
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Here's the *NeXTWORLD* Resource Guide

to tech support, training, maintenance,

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services, publications, and shareware –

plus our own exclusive Tip Sheet.



Help on the Way

Even experienced users may not know some of these shortcuts and helpful hints. Our panel of tipsters: Andrew Stone, Glenn Reid, Greg Cockcroft, Dan Lavin, and Simson Garfinkel.

1

USE THE PREFERENCES APPLICATION TO ADD YOUR OWN KEYBOARD EQUIVALENTS TO DIFFERENT APPLICATIONS AND MAKE THEM WORK THE SAME WAY. AN EXAMPLE: MAKE COMMAND-SHIFT-I BRING UP THE INSPECTOR PANEL IN EVERY APP.

2

BEFORE MAILING A WRITENOW FILE, BE SURE TO CLOSE IT, SCROLL IT TO THE BEGINNING, AND MAKE SURE NOTHING IS SELECTED. THIS AVOIDS A MULTITUDE OF PROBLEMS.

3

CUSTOMIZE YOUR SYSTEM BEEP BY RECORDING YOUR OWN, PLACING IT IN /LOCALLIBRARY/SOUNDS, AND SELECTING IT IN THE PREFERENCES APP.

4

HAVE ALL YOUR TARGETS SELECTED IN LIBRARIAN AND SAVE THE BOOKSHELF. THAT WAY, WHEN YOU DO A SEARCH, IT WILL LOOK IN ALL SELECTED AREAS.

5

PEOPLE WITH POOR EYESIGHT CAN DWRITE TERMINAL NXFIXEDPITCHFontSize 14 AND DWRITE TERMINAL NXFIXEDPITCHFont Ohlfs FOR A NICE READABLE TERMINAL.

6

GET THE OPENER APP FROM THE ARCHIVES TO AUTOMATICALLY OPEN FILES THAT HAVE BEEN ARCHIVED AND COMPRESSED BY UNIX'S TAR AND COMPRESS COMMANDS.

7

DON'T PUT YOUR EXTERNAL MICROPHONE TOO CLOSE TO YOUR MONITOR; IT CAUSES FEEDBACK.

8

GIVE EVERY FLOPPY DISK A DIFFERENT NAME SO THAT WHEN YOU INSERT ONE INTO YOUR MACHINE YOU'LL KNOW WHICH ONE YOU'VE INSERTED.

9

BUY MORE MEMORY. THIS IS THE BEST INVESTMENT YOU CAN MAKE TO UPGRADE YOUR MACHINE. STICK WITH 4MB SIMMS, OR BETTER, THE NEW 8MB AND 16MB SIMMS.



When it comes to finding reliable information and expertise to support NeXT computers, the platform's relatively small (but growing) installed base is both a blessing and a curse. Profit opportunities for service providers are limited, but the committed cadre of true believers makes up for the shortfall with community spirit. Often the best way to solve a problem is to ask questions at a local user group meeting or on-line forum. To help point the way to enlightenment, this Special Report compiles a comprehensive listing of support resources available in the NeXT community.

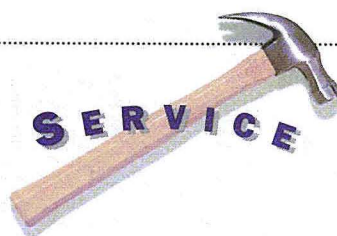


Class Action

NeXT, which offers training classes through NeXTedge, recommends taking a series along one of five learning paths tailored to five distinct sets of customers: users and developers; trainers; service technicians; UNIX system administrators; and system administrators without a UNIX background.

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NEXT COMPUTERS IN A MIXED UNIX ENVIRONMENT
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NEXT SYSTEM ADMINISTRATION FOR SERVICE TECHNICIANS
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NEXT HARDWARE SERVICE
1 DAY, \$300; SERVICE TECHNICIAN COURSE REQUIRED

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SITE REPAIRS AND PARTS. CUSTOMERS BEYOND 50 MILES PAY A FEE.

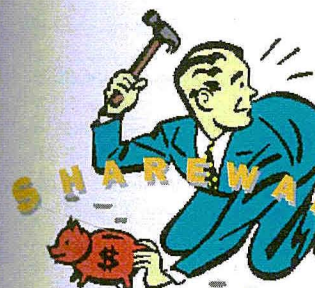
IF YOU LIVE IN A REMOTE PLACE AND YOUR RESELLER DOESN'T OFFER ON-SITE SERVICE, KEEP IN MIND THAT YOU CAN STILL GET ALL THE HELP YOU NEED, GRATIS, IF YOU'LL CARRY THE HARDWARE INTO A SERVICE CENTER YOURSELF.

* THE NEXT-DAY ON-SITE EXTENDED WARRANTY IS A ONE-TO-THREE-YEAR SERVICE, PRICED ACCORDING TO EQUIPMENT. THE COST RANGES FROM \$400 A YEAR TO COVER A NEXTSTATION WITH A 105MB HARD DRIVE TO \$1860 FOR A '030 WITH TWO 1.4GB DRIVES; AN OVER-50-



Lean on Them

Technical support is the first communication between a company and its customers, but a resource drain. NeXT has the approach of charging handsomely for high-quality support services. Most third-party hardware and software companies provide free telephone support — and the phone doesn't ring very often. You could argue that both are



For the Asking

Some of the most useful, most training NeXT programs also tend to be the most affordable. Many of these programs are available on Internet FTP servers: cs.orst.edu/sonata.cc.purdue.edu... or just ask a friend for a copy.

APPLICATIONS

IMAGEVIEWER, BY LENNART LÖVSTRAND, RANK XEROX EUROPARC
A HANDY UTILITY FOR VIEWING IMAGES IN 20 DIFFERENT TYPES OF FILE FORMATS, INCLUDING GIF, MacPaint, and TIFF.

MILE FEE MAY APPLY HERE AS WELL.

* THE SAME-DAY ON-SITE EXTENDED WARRANTY IS PRICED ON AN INDIVIDUAL BASIS, IT'S GENERALLY ABOUT 25 PERCENT MORE EXPENSIVE THAN NEXT-DAY EXTENDED SERVICE.

* THE TIME-AND-MATERIALS SERVICE IS FOR REPAIRS TO NONWARRANTY EQUIPMENT BILL \$140 PER HOUR, WITH A TWO-HOUR MINIMUM PLUS PARTS.

* CUSTOM SERVICE PROPOSALS ARE DIVIDED INTO THREE CATEGORIES, ALL PRICED ON AN INDIVIDUAL BASIS: THE CUSTOM BID PROGRAM

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VIDUAL BASIS: THE CUSTOM BID PROGRAM IS

improvements over Apple's stan-
dard advice: "Talk to your dealer."

NEXT

* NeXT's SUPPORT, TRAINING, AND SERVICE
WING, NeXTEDGE, SENDS OUT A \$200-A-YEAR
QUARTERLY SUPPORT BULLETIN THAT MAY BE A
GOOD FIRST PLACE TO GO WITH SOFTWARE QUES-
TIONS. EACH ISSUE COMES WITH A FLOPPY DISK
AND AN UPDATED SET OF HELP FILES TO INCORPO-
RATE INTO YOUR DIGITAL LIBRARIAN.

* FOR MORE PERSONALIZED SERVICE AND BASIC
PRODUCT INFORMATION, YOU'LL NEED THE NeXT-
EDGE TOLL-FREE SUPPORT NUMBER, 800/848-
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CARD NUMBER UNLESS YOUR QUESTIONS ARE
MORE TECHNICAL. IN THAT CASE, THEY'LL SEND
YOU TO ONE OF TWO HOTLINES. DEVELOPER PRO-
BLEMS GO TO THE DEVELOPER HOTLINE, WHICH
CHARGES PER CALL (\$225); PER SIX CALLS
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USENET FACE FILE, AND X11 BITMAPS, AS WELL AS
NeXT's STANDARD TIFF AND EPS. THIS PROGRAM,
WHICH ALSO CONVERTS BETWEEN DIFFERENT KINDS OF
IMAGE FORMATS, IS A MUST-HAVE FOR THOSE IN THE
GRAPHICS TRADES.

OPENER, BY MIKE HAWLEY, MIT MEDIA LABORATORY
OPENER KNOWS HOW TO PACK AND UNPACK ARCHIVE FILES
IN A VARIETY OF FORMATS: ARC, ZIP, ZOO, TAR, SHAR, ETC.
IT'S EASILY EXTENDED TO INCORPORATE NEW FILE FORMATS.

MEDIAVIEW, BY DICK PHILLIPS, LOS ALAMOS
NATIONAL LABORATORIES
THIS PROGRAM BREAKS DOWN TWO-DIMENSIONAL REPRE-
SENTATIONS OF DATA TO APPEAR AS PAGES IN A BOOK AND
LETS USERS CREATE THEIR OWN PATHS THROUGH A MULTI-
MEDIA DATABASE.

DEFAULT MANAGER
YOU CAN VIEW AND MAKE CHANGES TO THE INFORMATION
STORED INSIDE YOUR NeXTSTEP DEFAULTS DATABASE
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BACKSPACE, BY SAMUEL G. STREEPER,
NeXT COMPUTER
THIS SCREEN-SAVER PROGRAM BLOWS AWAY COMMERCIAL
SCREEN SAVERS COSTING MUCH MORE. DUE TO A DIS-
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COMPLETED THE CORRECT TECHNICAL TRAINING,
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363-5188) OR E-MAIL (ASK_NEXT@NEXT.COM)
IN ADDITION TO THE TOLL-FREE NUMBER. THE
DEVELOPER SERVICE ALSO SERVES EUROPE
(415/424-8500 BY PHONE OR 415/363-
5188 BY FAX).

* THERE'S ALSO A PACKAGE DEAL COMBINING A
FULL SUBSCRIPTION TO EACH OF THE HOTLINES
FOR \$6500 AND A SO-CALLED "PREMIUM PRO-
GRAM" THAT IS DESIGNED AND PRICED ON A CASE-
BY-CASE BASIS. UNDER THE PREMIUM PLAN,
WHICH NeXT IS AIMING AT ITS BIGGEST USERS,
EACH COMPANY IS DESIGNATED AN ENGINEER OF
ITS OWN.

THIRD PARTIES

THE BEST BET IS USUALLY TO GO STRAIGHT TO THE
SOURCE, WHERE A SMALL BUT REPRESENTATIVE
SURVEY REVEALED THAT HELP IS GENERALLY FREE

KERMIT, BY FRANK DA CRUZ, COLUMBIA UNIVERSITY
ALTHOUGH NOT A NeXTSTEP PROGRAM, KERMIT ALLOWS
YOU TO USE YOUR NeXT AS A TERMINAL TO THE WORLD.
THIS COMMUNICATIONS PROGRAM ALSO IMPLEMENTS A
RELIABLE AND REASONABLY PEPPIY FILE-TRANSFER PROTOCOL.
IF YOU HAVE A MODEM, GET KERMIT.

STUART, BY SCOTT HESS
THIS SHAREWARE PROGRAM IS A BETTER TERMINAL-EMULA-
TOR PROGRAM THAN NeXT's TERMINAL. (NOT SURPRISING,
SINCE SCOTT HESS WROTE NeXTSTEP 2.0'S TERMINAL
PROGRAM AS WELL.) IT OFFERS MANY, MANY FEATURES AND
GREAT FREEDOM IN CUSTOMIZING.

MAILHELPER, BY IZUMI OHZAWA
MAILHELPER IS A HANDY PROGRAM FOR INSERTING YOUR
.SIGNATURE FILE INTO A MAIL MESSAGE YOU ARE EDITING,
QUOTING SOMEBODY ELSE'S MAIL MESSAGE OR USENET
POSTING BEFORE YOU REPLY, AND REFORMATTING TEXT.

DESKJET500, BY REIMER MELLIN
THIS LETS YOU DRIVE AN HP LASERJET III OR DESKJET
500 FROM A NeXT USING NeXTSTEP's DISPLAY
POSTSCRIPT SERVER.

MONITOR, BY ROY J. MONGIOVI
A MOVING ICON SHOWS THE PERCENT OF CPU TIME BEING
USED EACH SECOND, LETTING YOU KNOW HOW BUSY YOUR
SYSTEM IS.

EMACS NeXTSTEP, BY JOHN G. MEYERS
THIS IS A NeXTSTEP FRONT END FOR THE EMACS EDITOR.

* MICROTECH INTERNATIONAL HARDWARE IS COVERED
FOR EITHER TWO OR FIVE YEARS. CUS-
TOMERS PHONE 800/626-4276 BEFORE SHIP-
PING THE HARDWARE BACK FOR REPAIRS; THE
TURNAROUND TIME IS 48 HOURS, GUARANTEED.
THE TWO-YEAR PLAN APPLIES TO ALL ECLIPSE
50R REMOVABLE CARTRIDGE DRIVES, 2.0T TAPE
BACKUPS, AND CD-ROM DRIVES. ALL ECLIPSE
HARD DRIVES SOLD IN THE UNITED STATES AND
CANADA ARE COVERED FOR FIVE YEARS; TWO
YEARS OVERSEAS. FULL-TIME TECHNICAL SUPPORT
IS ALSO AVAILABLE BY PHONE.

* CUBE ROUTE WILL SERVICE ITS HARDWARE FOR
TWO YEARS – AND CONTINUE TO ANSWER QUES-

AFTER YOU'VE PAID FOR THE PHONE CALL. A
SAMPLING OF POLICIES:

* WORDPERFECT, WHICH BOASTS ABOUT TWO
DOZEN TOLL-FREE NUMBERS IN ITS CUSTOMER-
SUPPORT DEPARTMENT, DOESN'T HAVE ONE FOR
NeXT USERS; IT'S A TOLL CALL TO UTAH AT
801/228-9910.

* STONE DESIGN OFFERS UNLIMITED FREE SUP-
PORT TO REGISTERED USERS. CALL 505/345-
4800 OR SEND E-MAIL TO INFO@STONE.COM.
STONE COLLECTS SUPPORT FEES ONLY WHEN
THERE ARE ADDITIONAL USERS AT A SITE OR
WHEN CUSTOMERS ARE COUNTING ON AUTOMATIC
UPGRADES. (UPGRADES ARE FREE OFF THE
INTERNET OR FROM DEALERS AND \$5 FROM
STONE ITSELF.)

* ADOBE SUPPORT IS WITHOUT LIMITATIONS OF
ANY KIND – ALTHOUGH THE POLICY IS CURRENTLY
UNDER REVIEW. STAFF CAN BE REACHED BY
PHONE BETWEEN 6 A.M. AND 5 P.M., PACIFIC
TIME, AT 415/961-0911; BY FAX AT 415/
961-4810; OR ON COMPUSErVE.

GAMES AND OTHER
TIME-WASTERS

NEWSGRAZER, BY JAYSON ADAMS
ONE OF THE MOST POPULAR PUBLIC-DOMAIN PROGRAMS,
JOHN BARLOW DESCRIBES THIS NeXTSTEP FRONT END
TO THE USENET AS "ONE OF THE SLEEKEST CRUISERS
THROUGH CYBERSPACE EVER BUILT." DUE TO THE ROGUE
NATURE OF THIS PROGRAM, SOMETIMES YOU'LL FIND IT
ON THE INTERNET ARCHIVES AND SOMETIMES YOU WON'T.

Ac_CHEN, BY STEFAN PREUSS AND THORSTEN
MUTSCHALL
THIS IS A SOLITAIRE GAME PLAYED WITH TILES. IT HAS
EXCELLENT GRAPHICS AND SOUND EFFECTS.

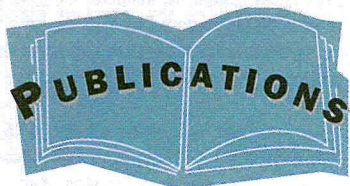
BLASTAPP, BY ALI OZER, NeXT COMPUTER
BLASTAPP IS A FIND-'EM-AND-SHOOT-'EM HELICOPTER WAR
GAME THAT SHOWS OFF THE NeXT's GRAPHICS AND SOUND
CAPABILITIES.

MINES, BY LEE WARD, DENVER
TRY TO FIND A PATH THROUGH A MINE FIELD WITH THIS
FINE IMPLEMENTATION OF THE TRADITIONAL MINE-HUNTER
PROGRAM.

EYECON, BY ROGER ROSNER, LIGHTHOUSE DESIGN
THIS PROGRAM MAKES IT EASY TO FIND YOUR MOUSE CUR-
SOR ON THE SCREEN WITH TWO EYES WATCHING FROM
THE DOCK.

TIONS AND OFFER FREE ADVICE AFTER THAT (EVEN
TO NONCUSTOMERS). BUYERS OF THEIR 660MB
AND 1GB DRIVES CAN, IN SOME CASES, PUR-
CHASE AN ADDITIONAL YEAR OF SERVICE FOR
ABOUT \$90. THE COMPANY CAN BE REACHED AT
800/282-3783.

* HSD MICROCOMPUTER U.S. HAS A ONE-YEAR
WARRANTY ON PARTS AND LABOR FOR ITS SCAN-
NERS. CUSTOMERS CAN CALL 800/828-5522
AND SEND EQUIPMENT BACK FOR REPAIRS OR
REPLACEMENT IF THE PROBLEM CAN'T BE FIXED
OVER THE PHONE. REPAIRS GENERALLY TAKE 48
HOURS. HSD IS CONSIDERING ADOPTING AN ON-
SITE POLICY TO EXTEND BEYOND THE FIRST YEAR.



Reading Room

The NeXT library is growing fast. Here's a list of some of the books and periodicals you'll need.

BOOKS

NEXTSTEP DEVELOPMENT

THE ART OF SCIENTIFIC COMPUTATION

RICHARD CRANDALL, \$42.95
(SPRINGER-VERLAG, NOVEMBER 1992)

NEXTSTEP APPLICATION PROGRAMMING

SIMSON L. GARFINKEL AND MICHAEL MAHONEY, \$39.95 (SPRINGER-VERLAG, 1992)

WRITING NeXT PROGRAMS

ANN WEINTZ, \$39.95
(BOARDWALK PUBLISHING, 1991)

DISPLAY POSTSCRIPT

DISPLAY POSTSCRIPT PROGRAMMING

DAVID A. HOLZGANG, \$24.95
(ADDISON-WESLEY, 1990)

PROGRAMMING THE DISPLAY POSTSCRIPT SYSTEM WITH NeXTSTEP

(THE PURPLE BOOK)
ADOBE SYSTEMS, \$26.95
(ADDISON-WESLEY, 1992)

POSTSCRIPT

POSTSCRIPT LANGUAGE PROGRAM DESIGN

(THE GREEN BOOK)
ADOBE SYSTEMS, \$24.95
(ADDISON-WESLEY, 1988)

POSTSCRIPT LANGUAGE REFERENCE MANUAL, SECOND EDITION (THE RED BOOK)

ADOBE SYSTEMS, \$28.95
(ADDISON-WESLEY, 1990)

POSTSCRIPT LANGUAGE TUTORIAL AND COOKBOOK (THE BLUE BOOK)

ADOBE SYSTEMS, \$18.95
(ADDISON-WESLEY, 1986)

REAL WORLD POSTSCRIPT

STEPHEN F. ROTH, \$22.95
(ADDISON-WESLEY, 1988)

TAKING ADVANTAGE OF POSTSCRIPT

JOHN F. SHERMAN, \$29.00
(WILLIAM C. BROWN, 1992)

THE POSTSCRIPT FONT HANDBOOK

JONATHAN GROSVENOR, KAYE MORRISON, AND ALEXANDRA PIM, \$24.95
(ADDISON-WESLEY, 1992)

THINKING IN POSTSCRIPT

GLENN REID, \$22.95
(ADDISON-WESLEY, 1992)

UNDERSTANDING POSTSCRIPT, THIRD EDITION
DAVID A. HOLZGANG, \$29.95 (SYBEX, 1992)

RENDERMAN

THE RENDERMAN COMPANION

JOHN UPSTILL, \$33.95
(ADDISON-WESLEY 1992)

UNIX AND MACH

THE DESIGN AND IMPLEMENTATION OF THE 4.3BSD UNIX OPERATING SYSTEM

SAMUEL J. LEFFLER, MARSHALL K. MCKUSICK, MICHAEL J. KARELS, AND JOHN S. QUARTERMAN, \$42.95 (ADDISON-WESLEY, 1988)

THE DESIGN OF THE UNIX OPERATING SYSTEM

MAURICE J. BACH, \$60.00
(PRENTICE-HALL, 1986)

GNU EMACS MANUAL

RICHARD STALLMAN, \$20.00
(FREE SOFTWARE FOUNDATION, 1987)

PRACTICAL UNIX SECURITY

SIMSON L. GARFINKEL AND GENE SPAFFORD, \$29.95 (O'REILLY & ASSOCIATES, 1991)

NETWORKS

MANAGING UUCP AND USENET

GRACE TODINO AND TIM O'REILLY, \$24.95
(O'REILLY & ASSOCIATES, 1989)

THE MATRIX: COMPUTER NETWORKS AND CONFERENCING SYSTEMS WORLDWIDE

JOHN S. QUARTERMAN, \$50.00
(DIGITAL PRESS, 1990)

USERS' DIRECTORY OF COMPUTER NETWORKS

TRACY LYNN LAQUEY, \$36.00
(DIGITAL PRESS, 1989)

USING UUCP AND USENET

GRACE TODINO AND DALE DOUGHERTY, \$21.95
(O'REILLY & ASSOCIATES, 1989)

BOOKSTORES

YOU CAN ORDER MOST OF THE ABOVE BOOKS BY ELECTRONIC MAIL FROM EITHER OF THE FOLLOWING STORES. JUST E-MAIL THEM THE TITLE ALONG WITH YOUR CREDIT CARD NUMBER, EXPIRATION DATE, AND MAILING ADDRESS.

COMPUTER LITERACY BOOKS

2590 N. FIRST ST.
SAN JOSE, CA 95131
408/435-1118
INFO@CLBOOKS.COM

QUANTUM BOOKS

4 CAMBRIDGE CTR.
CAMBRIDGE, MA 02142
617/494-5042
QUANBOOK@WORLD.STD.COM

PERIODICALS

NeXTWORLD
800/755-6398
NEXTWORLD@NEXTWORLD.COM

NeXTWORLD EXTRA
800/755-6398
EXTRA@NEXTWORLD.COM

OBJECT-BASED COMPUTING
800/394-4487
GWKIV@ITS.COM

THE MATHEMATICA JOURNAL
800/288-1422

NeXTWATCH JOURNAL
415/474-7803
EDITORS@SKYLEE.COM

THE APPWRAPPER
206/448-0845
PTHOMP@PAGET.COM

UK NeXT NEWSLETTER
44/904/43.23.74
NIGELM@OHM.YORK.AC.UK

NeXTWEEK
614/261-6833
NEXTWEEK@KIWI.SWHS.OHIO-STATE.EDU

DOCUMENTATION

PRINTED COPIES OF ALL ON-LINE DOCUMENTATION ARE AVAILABLE FROM ADDISON-WESLEY AS THE "NeXT DEVELOPERS LIBRARY."

NeXT OPERATING SYSTEM SOFTWARE, \$24.95

NEXTSTEP REFERENCE MANUAL, \$44.95

NeXT DEVELOPMENT TOOLS, \$26.95

SOUND, MUSIC, AND SIGNAL PROCESSING ON A NeXT COMPUTER: CONCEPTS, \$19.95

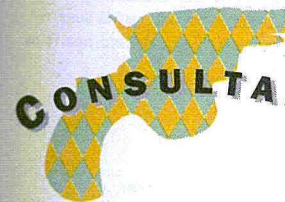
SOUND, MUSIC, AND SIGNAL PROCESSING ON A NeXT COMPUTER: REFERENCE, \$39.95



Where to Buy It

NeXT has dealers. Really, it does. It just doesn't want us to publish a list of them for fear that other manufacturers will try to convert them to competitive products. At last count, NeXT claimed 70 value-added dealers, 55 value-added resellers, 50 systems integrators, and 150 campus resellers in North America. So how do you go about finding one? Call 800/848-6398.

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Hired Guns

This is an unverified list of offering their services to the community. The information has been provided by the consultants themselves and NeXTWORLD in no way endorses any of it. The code indicates their primary area(s) of expertise. Names are organized alphabetically, by firm or individual.

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N: SOUND AND MUSIC
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P: CUSTOM PROGRAMMING
Q: QUALITY ASSURANCE
R: INTERNATIONALIZATION
S: SYSTEM ADMINISTRATION AND NETWORKS
T: TRAINING AND SUPPORT
U: UNIX

WEST

ADAPTATIONS; LOS ALAMOS, NM;
505/662-9497 R

JOE BARELLO; SAN FRANCISCO;
415/647-6398 S, C, P

PAUL BROWN; LOS ALAMOS, NM;
505/662-5698 H, S

JOHN CHOI; LAGUNA NIGUEL, CA;
714/363-1687 P, D

DOROTHY COULTER; SAN JOSE, CA;
408/224-5549 P, S, U

DOLPHIN SOFTWARE; MOUNTAIN VIEW, CA;
415/966-8919 D, U

WILLIAM J. EDNEY; LOS ALAMOS, CA;
505/662-0043 P, S

JOHN FEILER; MOUNTLAKE TERRACE, WA;
206/776-1656 S, C, P

FORTUITY MARKETING CONSULTING,
FOREST KNOLLS, CA;
415/488-9142 M

HARVE S. GRIFFITH; AUSTIN, TX;
512/250-1890 P

10 USE THE .EDITDICT FACILITY TO MAKE KEYBOARD SHORTCUTS FOR USE IN EDIT. SEE EDIT'S USER DOCUMENTATION FOR DETAILS.

11 LEAVE YOUR NeXT MACHINE ON AT ALL TIMES AND USE A SCREEN SAVER. THIS PUTS LESS STRESS ON YOUR SYSTEM (AND ESPECIALLY YOUR HARD DRIVE) THAN WOULD TURNING IT ON AND OFF.

12 TURN UP THE KEY REPEAT RATE IN PREFERENCES SO YOUR CURSOR KEYS MOVE YOU AROUND AT A REASONABLE CLIP.

13 SAVE YOUR MONEY: DON'T BUY SURGE SUPPRESSORS FOR YOUR NeXT. THEY'RE BUILT IN.

14 USE 70% ISOPROPYL ALCOHOL ON COTTON BALLS TO CLEAN YOUR SCREEN. THIS PRESERVES THE GLARE COATING. USE THE SAME CLEANER ON THE METAL ROLLERS OF YOUR MOUSE TO KEEP IT TRACKING SMOOTHLY.

15 IF YOU'RE DRAGGING-AND-DROPPING, GET THE WINDOW YOU ARE DRAGGING FROM OUT OF THE WAY BY HITTING COMMAND AND THE DOWN ARROW AT THE SAME TIME.

16 TRIPLE-CLICKING MOST APPLICATIONS HIGHLIGHTS THE ENTIRE LINE. IF YOU THEN DRAG DOWN, YOUR SELECTION ADVANCES BY LINES INSTEAD OF WORDS. THIS KEEPS YOUR SELECTION CLEAN BY LINES. IT GOES FASTER TOO.

17 IN TERMINAL YOU CAN USE THE COPY AND PASTE UNIX COMMANDS TO SEND THE OUTPUT TO THE NeXT PASTEBOARD AND VICE VERSA. THAT WAY YOU CAN HAVE THE OUTPUT FROM A UNIX COMMAND AVAILABLE TO PASTE INTO WRITENOW OR MAKE THE TEXT OF A MAIL MESSAGE THE INPUT FOR A UNIX COMMAND.

18 IF YOU TEND TO LOSE TRACK, YOU CAN ENABLE POP-UP MENUS AND FIND YOUR CURSOR VERY QUICKLY. THIS IS ESPECIALLY USEFUL IF YOU HAVE A NeXTDIMENSION WITH TWO SCREENS.

19 IF YOU HAVE A RESIZABLE SHELF AS A WORKSPACE PREFERENCE, YOU CAN PUT STUFF IN IT, SHRINK IT AGAIN, AND THEN USE IT LIKE A DRESSER DRAWER. USE ONE FOR PROGRAMMING, ONE FOR PROJECTS.

20 IT'S TRULY USEFUL TO SLIDE THE DOCK DOWN OUT OF THE WAY IN ORDER TO WORK ON DOCUMENT WINDOWS, ESPECIALLY IN LANDSCAPE FORMAT.

21 IF YOU'RE CONNECTED TO THE NET VIA UUCP, YOU CAN DETECT INCOMING READ RECEIPTS BY USING THE UUQ COMMAND: UUQ -L TO VIEW OUTGOING MESSAGES AND UUQ -D TO SELECTIVELY DELETE THEM.

ED COMPUTING
4487
DOM

ATICA JOURNAL
1422

JOURNAL
7803
YLEE.COM

APPER
0845
GET.COM

LEWSLETTER
13.23.74
M.YORK.AC.UK

6833
KIWI.SWHS.OHIO-STATE.EDU

OCUMENTATION

PIES OF ALL ON-LINE DOCUMENTATION
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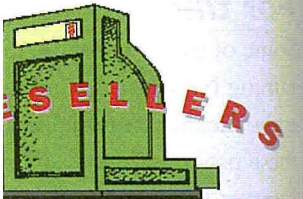
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REFERENCE MANUAL, \$44.95

LOPMENT TOOLS, \$26.95

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MPUTER: REFERENCE, \$39.95



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- T: TRAINING AND SUPPORT
- U: UNIX

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JOE BARELLO; SAN FRANCISCO;
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714/363-1687 **P, D**

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408/224-5549 **P, S, U**

DOLPHIN SOFTWARE; MOUNTAIN VIEW, CA;
415/966-8919 **D, U**

WILLIAM J. EDNEY; LOS ALAMOS, CA;
505/662-0043 **P, S**

JOHN FEILER; MOUNTLAKE TERRACE, WA;
206/776-1656 **S, C, P**

FORTUITY MARKETING CONSULTING,
FOREST KNOLLS, CA;
415/488-9142 **M**

HARVE S. GRIFFITH; AUSTIN, TX;
512/250-1890 **P**

OTTO GYGAX; BLODGETT, OR;
503/453-4149 **S, H, N**

INHERENT TECHNOLOGIES; PORTLAND, OR;
503/224-9454 **D, S**

INTEGRE TECHNICAL PUBLISHING;
ALBUQUERQUE, NM;
505/271-2120 **B**

DOUGLAS P. KENT; SEATTLE;
206/325-7870 **P**

MARKUS LANKEIT; SEATTLE;
206/285-5320 **P, H**

LIVEWARE; FORT COLLINS, CO;
303/484-7606 **S, N**

CHARLES C. LLOYD;
THE WOODLANDS, TX;
713/363-9001 **P**

HAROLD LONGBOTHAM;
SAN ANTONIO, TX;
512/691-5518 **O, P**

MIKE MAHONEY; LOS ANGELES;
310/985-1550 **T**

STEVE MAYS; APPLE VALLEY, CA;
619/240-3804 **S, I**

MICHAEL McNABB; SAN FRANCISCO;
415/695-9684 **P, N**

STEVEN MUNT; TORRANCE, CA;
310/791-1052 **F**

ALEX DUONG NGHIEM; AUSTIN, TX;
512/343-1111 **P**

ONYX SYSTEMS; FORT WORTH, TX;
817/432-9107 **P**

MICHAEL J. PANZITTA, P.E.;
SANDY, UTAH;
801/944-4329 **P**

PDH; SAN JOSE, CA;
408/428-9596 **S, I, D**

PENCOM; AUSTIN, TX;
512/343-1111 **S, P**

RICHARD PLEVIN; LOS ALTOS, CA;
415/949-4989 **U, F, T**

THOMAS POFF; ROHNERT PARK, CA;
707/795-3758 **P, U**

TIM PUGH; SALEM, OR;
503/581-1442 **O, P**

HARSHA R. RAO; HOUSTON;
713/872-6776 **I**

MASOUD SALEHI-SEDEH; HOUSTON;
713/661-0926 **I**

CARLOS SALINAS; REDWOOD CITY, CA;
415/368-5124 **I**

SCOTT SHATTUCK; LOS ALAMOS, NM;
505/662-5619 **P**

MIKE SHEBNEK; RIVERSIDE, CA;
714/924-4230 **T**

PHILIP SMITH; SAN FRANCISCO;
415/931-9283 **P, U**

ANDREW STONE; ALBUQUERQUE, NM;
505/345-4800 **I, P**

TODD M. SWAN; LOS ALAMOS, NM;
505/662-9444 **U, S**

PAUL VERKET; MANHATTAN BEACH, CA;
310/546-3086 **U**

ALUR VISHWANATH; HOUSTON;
713/363-0671 **P**

ANDREW VYRROS; SAN FRANCISCO;
415/626-7144 **G**

DANIEL WAYNE; SAN FRANCISCO;
415/566-3028 **C, D**

BRIAN WILLOUGHBY; BELLEVUE, WA;
206/865-0071 **N, D**

JEFF WISHNIE; SAN FRANCISCO;
415/497-6892 **P, T, S**

EAST

KEN ANDERSON; STAMFORD, CT;
203/967-8305 **S**

ROBERTO ARROCHA; CHARLOTTE, NC;
703/554-9673 **F**

B&W SOFTWARE; MORETOWN, VT;
802/496-5113 **P, C**

THOMAS BAKER; DURHAM, NH;
603/743-4987 **P**

BLACK MARKET TECHNOLOGIES;
NEW YORK;
718/522-5090 **P, F, S**

BLACKSMITH; WASHINGTON, DC;
703/524-6147 **S, P**

MICHAEL BRANTON; DELAND, FL;
904/736-1793 **S, P, C**

ERIC CELESTE; BOSTON;
617/484-5040 **I**

NICHOLAS CHRISTOPHER;
JACKSON HEIGHTS, NY;
718/478-0475 **P, F**

JAMES CORNACCHIA; JERSEY CITY, NJ;
201/420-1084 **T, S, D**

DMR GROUP; WELLESLEY, MA;
617/237-0087 **B, G, U**

ELECTRONIC DIRECTIONS; NEW YORK;
212/213-6500 **P, B**

DAVID J. FERRERO; HARTFORD, CT;
203/429-4695 **P**

ANTHONY G. HOLLAND;
SARATOGA SPRINGS, NY;
518/587-6103 **N, E**

ROBERT LA FERLA; CAMBRIDGE, MA;
617/252-0088 **P**

LIGHT PRINTING; NEW YORK;
212/226-5003 **B**

JOHN MOCNIK; NORTH BRUNSWICK, NJ;
908/821-4749 **D, S, F**

MICHAEL E. MOORE; NEW YORK;
212/420-0118 **P**

CATHERINE PAVLOV; NEW YORK;
718/243-0049 **U, T**

CHARLES L. PERKINS;
CAMBRIDGE, MA;
617/547-1917 **P, I, C**

CHRISTOS T. PYRROS; NEWARK, DE;
302/657-9303 **S, C**

RDR; WASHINGTON, DC;
703/591-8713 **D**

TASC; WASHINGTON, DC;
703/834-5000 **S, P**

VNP SOFTWARE; CAMBRIDGE, MA;
617/864-6768 **D**

CAROL WESTBERG; HANOVER, NH;
603/643-2082 **M**

WHETSTONE; LEXINGTON, KY;
606/273-1752 **P**

MIDWEST

JOHN N. ALEGRE; ST. PAUL, MN;
612/699-2709 **S, P**

JOHN BARTLEY; ST. CHARLES, MO;
314/928-6913 **S, D, B**

COMPARE TECHNOLOGIES;
SCHAUMBURG, IL;
708/310-1707 **T, P, D**

ANDREW T. FOSTER; MIDDLETON, WI;
608/836-0631; **M, P**

EZRA GOLDMAN; NAPERVILLE, IL;
708/505-9100 **I**

INTEGRITY SOLUTIONS; MINNEAPOLIS;
612/223-8474 **D**

JIM KIRALY; CLEVELAND;
216/362-8592 **P**

JOHN LANDWEHR; EVANSTON, IL;
708/864-7811 **C**

JEFF PIPER; MASON, MI;
517/676-5725 **S, P**

GREGOR N. PURDY; YPSILANTI, MI;
313/572-1779 **P, I**

BILL ROTH; MADISON, WI;
608/251-3244 **S**

SOFTWARE CLEARING HOUSE;
CINCINNATI;
513/579-0455 **S, D**

TECHWARE; ELGIN, IL;
708/888-3892 **I**

PETER URKA; ANN ARBOR, MI;
313/747-8610 **P**

INTERNATIONAL

SHMUEL BROWNS; JERUSALEM, ISRAEL;
972/2/61.07.85 **S, U**

THOMAS BURKHOLDER;
VANCOUVER, BC;
604/732-3149 **S, P**

PAUL CHERNETT;
COLCHESTER, ENGLAND;
44/206/87.20.48 **U, S**

JOSEPH CHIN; VANCOUVER, BC;
604/879-6830 **D, T**

CODEx SOFTWARE DEVELOPMENT;
ALBERT PARK, VIC, AUSTRALIA;
61/3/696.67.57 **P, C**

ALAN DIBB; INVERMERE, BC;
604/342-6596 **O**

OTTO HAINZL; VIENNA, AUSTRIA;
43/222/523.68.74 **U, S, I**

FEDERICO HEINZ; BERLIN;
49/30/784.98.64 **S, P**

INSTEP MOBILE COMMUNICATIONS;
VANCOUVER, BC;
604/872-7116 **P, C**

NICOLE KAIYAN;
ABBOTSFORD, VIC, AUSTRALIA;
61/3/417.22.90 **P, A**

THOR-LEE LEGVOLD; FANTOFT, NORWAY;
47/5/21.24.59 **S, B**

PAUL LYNCH; LONDON;
44/494/67.15.01 **S, P**

MERK INFORMATION SYSTEMS;
ZURICH, SWITZERLAND;
41/1/272.22.62 **F, P, D**

NIGHTSHADE SOFTWARE;
EDMONTON, ALB;
403/433-3963 **P**

BERNHARD NOCKER;
SALZBURG, AUSTRIA;
43/662/80.44.67.50 **U, S**

LYLE D. PARKYN; VANCOUVER, BC;
604/324-3311 **S, I**

PIXELUTION; LONDON;
44/462/43.40.29 **G, P**

GIANFRANCO POCECAI; MILAN, ITALY;
39/2/55.00.63.85 **P, S**

GARY RITCHIE; EDMONTON, ALB;
403/433-3963 **S, P**

BILL SCHELL; HONG KONG;
852/666.55.06 **S, C**

GIDEON TEARLEL; OXFORD, ENGLAND;
44/865/27.22.77 **B, P**

KARSTEN THYGESEN;
AALBORG, DENMARK;
45/98/12.42.59 **P, C**

ANDREW TYLDESLEY; HAMILTON, ONT;
416/575-8197 **P, G**

DIEDERIC VLAMINGS; AMSTERDAM,
THE NETHERLANDS;
31/20/686.95.02 **I**

JOHN P. WALSH; VANCOUVER, BC;
604/879-5448 **N**



22

SOMETIMES NeXTMAIL WITH NO ENCLOSED FILES SHOWS ENCLOSURES DUE TO BOLDING OR UNDERLINING. TO SIMPLIFY THE MESSAGE, HIT THE NeXT MAIL BUTTON TWICE TO CONVERT IT INTO ASCII AND THEN BACK INTO A NICE FONT WITHOUT MESSY ENCLOSURES.

23

LARGE MAIL MESSAGES CAN TAKE A LONG TIME TO IMAGE. IF YOU WANT TO DELETE ONE TO AVOID CLICKING IT AGAIN BY MISTAKE, HIGHLIGHT IT BY SHIFT-CLICKING AND THEN DELETE IT.

24

TO SAVE TIME WHEN COPYING A LARGE NUMBER OF FILES ONTO FLOPPIES, MAKE A FOLDER IN YOUR HOME DIRECTORY, LINK THE FILES TO IT, AND THEN DRAG THE FOLDER ONTO THE FLOPPY.

25

LEAVE AN OPENING ON YOUR DOCK AND PLACE A MINIATURIZED WORKSPACE MANAGER THERE FOR EASY ACCESS.

26

IF YOU HAVE A COLOR MONITOR, TURN IT OFF WHEN YOU'RE FINISHED WORKING – EVEN IF YOU LEAVE YOUR MACHINE ON.

27

IF YOU HAVE AN NEC MONITOR WITH BOTH BNC AND SUB-D CONNECTORS, YOU CAN USE IT FOR BOTH A NeXT AND A MAC BY USING A SWITCH TO MOVE BETWEEN PLATFORMS.

28

TO COPY AND PASTE GRAPHIC IMAGES, OPEN A RICH TEXT WINDOW (COMMAND-SHIFT-R) IN EDIT FOR THE BEST RESULTS.

29

USE SCOTT HESS'S TIMEMon FROM THE ARCHIVES TO TRACK CPU USAGE, IDENTIFY BOTTLENECKS IN YOUR WORKFLOW, AND FIND OUT WHEN MAJOR TASKS HAVE FINISHED WITHOUT WATCHING THAT WINDOW. KEEP IT ON YOUR DOCK.

30

HAVE FRAMEMaker (OR ANY OTHER "SLOW-BOOTER") BOOT AT LOGIN, SINCE IT TAKES SO LONG TO BOOT WHEN YOU NEED IT.

31

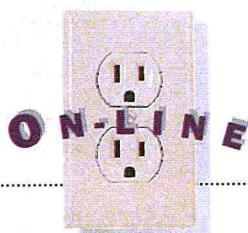
ACTIVATE THE ARCHIVE BOX IN MAIL'S PREFERENCES SO THAT A COPY OF ALL YOUR OUTGOING MAIL GOES AUTOMATICALLY INTO A SPECIAL OUTGOING.MBOX.

32

WHEN REPLYING TO MAIL, FORWARD THE ORIGINAL WITH IT SO PEOPLE WON'T LOSE TRACK OF THE TOPIC AFTER A DAY OR TWO.

33

PUT AN EMPTY WINDOW FROM OFTEN-USED APPLICATIONS AT THE BOTTOM OF YOUR SCREEN AND LEAVE ONLY THE TITLE BAR SHOWING. YOU CAN CLICK ON THE BAR TO QUICKLY MAKE THE APPLICATION ACTIVE.



Good Connections

Beware: An on-line connection is a continuous stream of tips, tricks, software, and juicy rumors. You'll be very busy. But you'll also be getting the most from your NeXT.

First, take a look at what's out there (see the table below). At one extreme are the simplest systems, such as the Boston Computer Society's bulletin board (BBS). You'll use a modem and telecommunications software to exchange messages with other BBS users. Further along the continuum, some BBS services – such as The WELL – are connected to the Internet, a planetary computer network that allows you to send text-based mail worldwide.

If you can send mail across the Internet, you can receive files from mail-based archive servers and participate in broadcast-mail discussions

(see "Mailing Lists"). Some BBS services bring you into the worldwide Usenet discussions, also known as "net news" (see "News Groups"). But BBS connections to Usenet are often clumsy; most NeXT users prefer to set up a UUCP connection to an Internet hub service. For ultimate on-line sophistication, hook up to the Internet using a dial-up Internet Protocol (IP).

NEWS GROUPS

THESE ARE JUST A FEW OF THE NEWS GROUPS THAT MAY BE OF INTEREST TO NeXT USERS. Usenet ADDS AND DELETES OVER 200 GROUPS DAILY, PROVIDING THE MOST COMPREHENSIVE LIST OF TOPICS WORLDWIDE. IF YOU HAVE A PARTICULAR INTEREST – SKIING OR FOLK MUSIC, TO NAME BUT TWO – CHECK YOUR NEWS READER'S LOOKUP MODE FOR A LIST OF AVAILABLE GROUPS.

COMP.SYS.NEXT.ADVOCACY
GENERAL NeXT FEEDBACK
COMP.SYS.NEXT.ANNOUNCE
PRODUCT ANNOUNCEMENTS AND COMMUNITY NOTICES
COMP.SYS.NEXT.HARDWARE
HARDWARE ISSUES
COMP.SYS.NEXT.MARKET
FOR-SALE AND WANT ADS
COMP.SYS.NEXT.MISC
ANYTHING THAT ISN'T APPROPRIATE ELSEWHERE
COMP.SYS.NEXT.PROGRAMMER
PROGRAMMING ISSUES
COMP.SYS.NEXT.SOFTWARE
USER DISCUSSIONS, HINTS, AND TIPS
COMP.SYS.NEXT.SYSADMIN
SYSTEM ADMINISTRATION ISSUES

MAILING LISTS

IF YOU'RE FEELING LONELY, A MAILING LIST IS SURE TO OVERFLOW YOUR MAILBOX WITH INTERESTING TIDBITS ON YOUR FAVORITE TOPICS.

ADOBE ILLUSTRATOR
JCHIN@WCRAFT.WIMSEY.BC.CA
AFS NeXT
INFO-AFS-REQUEST@TRANSARC.COM
BERKELEY MATH SOFTWARE GROUP
NB@CS.STANFORD.EDU
DATAPhile
DATAPHILE-REQUEST@MCS.ANL.GOV
EXECUTOR
EXECUTOR-REQUEST@ICTV.COM
FRAMEMaker
FRAMERS-REQUEST@DRD.COM
ICON
NEXT-ICON-REQUEST@BMT.GUN.COM
IMPROV
IMPROV-REQUEST@CALVIN.TAMU.EDU
JAPANESE
NEXT-NIHONGO-REQUEST@PINOKO.BERKELEY.ED
MATHEMATICA
MATHGROUP-REQUEST@YODA.PHYSICS.UNC.EDU
NETWORK MANAGEMENT
NEXT-LAB-REQUEST@CS.UBC.CA
NeXT MANAGERS
NEXT-MANAGERS-REQUEST@STOLAF.EDU
NeXT MUSIC
NEXTMUSIC-REQUEST@WRI.COM
NeXT PROGRAMMERS
NEXT-PROG-REQUEST@CPAC.WASHINGTON.EDU
NUGGET NEWS
NUGGET-REQUEST@NEXT.COM
PUBLISHING
PUBLISH-REQUEST@CHRON.COM
SNUG (SCIENCE)
SNUG-REQUEST@WHITEWATER.CHEM.WISC.EDU
TELECOMMUNICATIONS
NEXTCOMM-REQUEST@MARBLE.COM
UNITED KINGDOM
UK-NEXT-USERS-REQUEST@OHM.YORK.AC.UK
NEXT-UK-USERGROUPS-REQUEST@ASMEC.CO.UK

Provider	Cost per month	Connect charges	Internet mail	Local topics	Usenet news groups	Access to ftp & telnet	UUCP for NeXTmail	SLIP, PPP and CSLIP	T1 (1.5MB) per year	Local service area	Information
Anterior		\$2.45/hr					\$35/mo			CA	415/328-5615
BCS	\$39/yr	none		*						MA	617/252-0600
BIX	\$39/qtr	\$3/hr	†	*						U.S.	800/227-2983
CompuServe	\$7.95	none	*	*						U.S.	800/848-8199
GUN							\$10/mo	\$80/mo		NY	718/260-9848
Portal	\$35	\$1.95/hr	*	*	*	*	†	†		CA	408/973-9111
NetCom	\$19.50	none	*		*	*	\$25	†		CA	408/554-8649
MV	\$2/hr						\$7/mo 1hr			NH	603/429-2223
Panix	\$10	none	*		*	\$9	*			NY	718/965-3768
The World	\$5	\$2	*		*	*				MA	617/739-0202
The WELL	\$10	\$2	*	*	*	†				CA	415/332-4335
BARRNet								\$2500/yr	\$5200	CA	415/725-1790
Colorado SuperNet	none	\$2/hr	*		*	*	\$2/hr	\$250/mo	\$19,600	CO	303/273-3471
CERFNet	\$20	\$5/hr	*		*	*		\$250/mo*	\$15,600	CA	619/455-3900
CONCERT	\$30	none	*		*	*	\$25/mo	\$150/60hrs	\$6000	NC	919/248-1999
NorthWest Net									\$10,000	*	206/562-3000
PSI	\$29	none	*		*	*	\$25/mo	\$175/mo	\$30,000	U.S.	703/620-6651
UUNET (toll-free)							\$300/yr	†		U.S.	703/204-8000
UUNET (local)							\$480/yr	\$250	\$24,000	U.S.	703/204-8000
UUNET (foreign)							\$432/yr			*	703/204-8000
Dircon	£10/mo		*	*	*					U.K.	info@dircon.co.uk
Gold			*		*					Germany	cs@gold.sub.org
Actrix	NZ \$72/mo		*		*	NZ \$72/mo	*			New Zealand	paul@actrix.gsa.nz
ixgch							*			Switzerland	41/61/811.56.35

ALL PRICES LISTED ARE THE LOWEST IN THE CATEGORY AND MAY BE SUBJECT TO RESTRICTIONS. PRICES DO NOT INCLUDE HARDWARE OR START-UP COSTS. SERVICE AREAS AND DIRECT LINES VARY. PLEASE CALL FOR MORE INFORMATION. LISTINGS IN SHADED AREA ARE INTERNET BACKBONES AND LISTINGS IN ITALICS ARE OUTSIDE THE UNITED STATES.

*CURRENTLY AVAILABLE

†AVAILABLE SOON

Know Your Neigl

Introducing . . . The Comm up to you. User groups are and Canada, by state or pr able, we included e-mail ad

ASIA/PACIFIC

AUSTRALIA	OzNeXT; MELBO OzNeXT; VICTOR OzNeXT; LA TRC OzNeXT; PERTH; N.T.; BILL SCHEL QUARRY BAY; EDI NeXus; TOKYO; I NNUG; KANAGAV OSAKA UNIVERSIT SEUL; SOONAM PETALING JAYA; TI KELVIN TAN; 65/ SNG; PAUL WANN TWNUG; HSINCH NCTU-NUG; HSIN
HONG KONG	
JAPAN	
KOREA (SOUTH)	
MALAYSIA	
SINGAPORE	
TAIWAN	

EUROPE

AUSTRIA	VIENNA; MARTIN I SALZBURG; BERNI SINT-NIKLAAS; RA RAN SART; J.M V
BELGIUM	
COMMONWEALTH OF INDEPENDENT STATES	MOSCOW; SEVRIO NEXIDK; AARHU DKNUG; AALBOR BAÑIA; AALBORG; FUN; ESPOO; TIM BENUG; STRAS FANG; MONTPELL M.GERARD LAURE HUBERT DELAHAYE NANG; GRAVIGNY, NICE; KJARTAN EM PARIS; FREDERIC F GENEUS; HANNIC HANNOVER; MARTI BeNG; BERLIN; N NoGENUG; OLDE BLACK FOREST; B DORTMUND; MARC NEKST; STUTTGAR HEIDELBERG; GREC NEXTFRIENDS; HAI HAMBURG; ARNE S RUHR UNIVERSITY; MUC-NUG; MUNI NUK; KARLSRUHE, IOANNIS KOUTSELA ACADEMY OF SCIEN DUBLIN; KEVIN Mc YIN; JERUSALEM; I UNIVERSITA' DEGL BoNG; MODENA; I SKOPJE; KOTEVSK EINDHOVEN; FRANc NOW; AMSTERDAM NohNeXT; BERGEI WARSAW; JANUSZ I LISBOÑUG; LISBO LJUBLJANA; IGOR TI MADRID; JAVIER PO BILBAO; MARISA Fe SNAg; STOCKHOLM BASEL; FLORIAN GL NICE; ZÜRICH; MA PRILLY; DANIEL ALL OXFORD; PAUL BEA NOTTINGHAM BULLE GNAsh; SHEFFIELL UNIVERSITY OF YORl QUEENS UNIVERSITY COMPUSeRve NeXl UNIVERSITY OF YORI UOENUG; COLCHE
FINLAND	
FRANCE	
GERMANY	
GREECE	
HUNGARY	
IRELAND	
ISRAEL	
ITALY	
MACEDONIA	
NETHERLANDS	
NORWAY	
POLAND	
PORTUGAL	
SLOVENIA	
SPAIN	
SWEDEN	
SWITZERLAND	
UNITED KINGDOM	

CANADA

ALBERTA	CLUB NeXT; CALGA CALGARY; GASTON (NEON; EDMONTON,
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MAILING LISTS

IF LONELY, A MAILING LIST IS SURE TO
MAILBOX WITH INTERESTING TIDBITS ON
OPICS.

TOR

RAFT.WIMSEY.BC.CA

REQUEST@TRANSARC.COM

SOFTWARE GROUP

TANFORD.EDU

REQUEST@MCS.ANL.GOV

REQUEST@ICTV.COM

REQUEST@DRD.COM

REQUEST@BMT.GUN.COM

QUEST@CALVIN.TAMU.EDU

NGO-REQUEST@PINOKO.BERKELEY.ED

JP-REQUEST@YODA.PHYSICS.UNC.EDU

AGEMENT

REQUEST@CS.UBC.CA

IS

AGERS-REQUEST@STOLAF.EDU

C-REQUEST@WRI.COM

IMERS

3-REQUEST@CPAC.WASHINGTON.EDU

EQUEST@NEXT.COM

REQUEST@CHRON.COM

E)

UEST@WHITewater.CHEM.WISC.EDU

ITIONS

V-REQUEST@MARBLE.COM

VI

ISERS-REQUEST@OHM.YORK.AC.UK

ISERGROUPS-REQUEST@ASMEC.CO.UK

5MBJ	Local	
bar	service area	Information
	CA	415/328-5615
	MA	617/252-0600
	U.S.	800/227-2983
	U.S.	800/848-8199
	NY	718/260-9848
	CA	408/973-9111
	CA	408/554-8649
	NH	603/429-2223
	NY	718/965-3768
	MA	617/739-0202
	CA	415/332-4335
10	CA	415/725-1790
600	CO	303/273-3471
600	CA	619/455-3900
00	NC	919/248-1999
000	*	206/562-3000
000	U.S.	703/620-6651
000	U.S.	703/204-8000
000	U.S.	703/204-8000
	*	703/204-8000
	U.K.	info@dircon.co.uk
	Germany	cs@gold.sub.org
	New Zealand	paul@actrix.gen.nz
	Switzerland	41/61/811.56.35

IP COSTS. SERVICE AREAS AND DIRECT-DIAL
THE UNITED STATES.



Know Your Neighbors

Introducing . . . The Community, in all its international glory. The rest is
up to you. User groups are listed by country and, in the United States
and Canada, by state or province. Where phone numbers weren't avail-
able, we included e-mail addresses.

ASIA / PACIFIC

AUSTRALIA	OzNEXT; MELBOURNE; PAUL DAVIS; 61/3/344.53.97 OzNEXT; VICTORIA; BRETT ADAM; 61/3/696.24.90 OzNEXT; LA TROBE; NICOLE KAYAN; NICOLEK@LATCS1.LAT.OZ.AU OzNEXT; PERTH; KEVIN McISAAC; KEVIN@PYRMANIA.PYRAMID.COM.AU N.T.; BILL SCHELL; 852/666.84.12 QUARRY BAY; EDWIN TAM; 852/565.20.11 JAPAN NeXus; TOKYO; KAZUNORI SHIOYA; 81/3/33.57.93.61 NNUG; KANAGAWA; TETSUJIRO YASUSHI; 81/468/59.31.62 OSAKA UNIVERSITY; Mr. OGIHARA; OGIHARA@RD.ECIP.OSAKA-U.AC.JP SEOUL; SOONAM KAHNG; 82/2/51.62.31 PETALING JAYA; THOMAS LEE; 60/3/791.68.88 KELVIN TAN; 65/278.78.88 SNG; PAUL WANG; 65/288.41.84 TAIWAN TWNUG; HSINCHU; 886/7/711.45.40 (TAIWAN), 213/470.96.85 (U.S.) NCTU-NUG; HSINCHU; 886/35/71.21.21 EXT. 4410
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EUROPE

AUSTRIA	VIENNA; MARTIN LAUBACH; NEXT@RUBLE.FML.TUWIEN.AC.AT SALZBURG; BERNHARD NOCKER; 43/662/80.44.67.50 SINT-NIKLAAS; RAF SCHIETEKAT; 32/3/776.30.39 RAN SART; J.M VASSART; 32/71/34.05.05
BELGIUM	
COMMONWEALTH OF INDEPENDENT STATES	MOSCOW; SEVRIUKOV VLADIMIR ANATOLIEVICH; 7/95/200.25.68 NEXTiD; AARHUS; BRIAN MAYOH; BMAYOH@DAIMI.AAU.DK DKNUG; AALBORG; KARSTEN THYGESEN; 45/98/12.42.59 BAÑIA; AALBORG; ERICK HERRING; 45/98/10.92.57 FUN; ESPOO; TIMO VENDELIN; 358/0/45.61 BENUG; STRASBOURG; BENNANI KAMAL; 33/88/41.64.14 FANG; MONTPELLIER; THIERRY CHARLES; 33/67/64.07.97 M.GERARD LAURENT; VAUCRESSON; NICOLAS@BORA.INRIA.FR HUBERT DELAHAYE; LIVRY-GARGAN; 33/1/49.63.82.07 NANG; GRAVIGNY; CHRISTOPHE JANOT; 33/1/33.80.00.23 NICE; KUARTAN EMILSSON; 33/93/52.98.36 PARIS; FREDERIC PRALONG; 33/1/40.60.78.36 GENEUS; HANNOVER; MATHIAS PRUESTEL; MP@AUGUR.HAN.DE HANNOVER; MARTIN ORTLEPP; 49/511/42.12.78 BeNG; BERLIN; MATTHIAS KLOSE; 49/30/772.24.56 NoGENUG; OLDENBURG; GERHARD MOELLER; 49/441/755.20 BLACK FOREST; BAIRSBRONN; HEINZ CONRAD; 49/7442/76.54 DORTMUND; MARCUS BRUGGEMANN; MARCUS@AMG.DE NEKST; STUTTGART; MICHAEL HAEUPTLE; 49/7154/164.42 HEIDELBERG; GREGOR HOFFLEIT; 49/6221/56.27.71 NEXtFRIENDS; HAMBURG; MARTIN IMBECK; 49/40/87.44.36 HAMBURG; ARNE SCHROEDER; ASCHROEDER@DART.DE RUHR UNIVERSITY; BOCHUM; MARTIN LADES; 49/234/700.79.94 MUC-NUG; MUNICH; BORIS BAERMICHL; 49/89/580.29.53 NUK; KARLSRUHE; BERND WILD; 49/721/965.43.10 IOANNIS KOUTSELAS; IOK@THESEAS.NTUA.GR ACADEMY OF SCIENCES; BUDAPEST; DR. LASZLO KOVACS; 36/1/129.78.61 DUBLIN; KEVIN Mc DONNELL; 353/1/325.02 YIN; JERUSALEM; SHMUEL BROWNS; 972/2/61.07.85 UNIVERSITA' DEGLI STUDI; MILAN; GIANFRANCO POCECAI; 39/2/757.52.44 BoNG; MODENA; ARRIGO BENEDETTI; 39/59/22.49.29 SKOPLJE; KOTEVSKI CANE; 38/91/42.28.22 EINDHOVEN; FRANCISCO DE URQUIJO; URQUIJO@SERI.PHILIPS.NL NOW; AMSTERDAM; DIEDERIC VLAMINGS; 31/20/686.95.02 NorNeXT; BERGEN; THOR-LEE LEGVOLD; 47/5/54.42.14 WARSAW; JANUSZ MOTOSZKO; JASIO@PRODO.NASK.ORG.PL LISBO-NUG; LISBON; AMARO RICA DA SILVA; 351/1/80.20.45 EXT. 1619 LJUBLJANA; IGOR TAVCAR; 38/61/27.21.46 MADRID; JAVIER POVES; 34/1/397.45.73 BILBAO; MARISA FERNANDEZ; 34/4/464.77.00 EXT. 2536 SnAG; STOCKHOLM; BJORN BACKLUND; 46/8/612.89.95 BASEL; FLORIAN GUTZWILLER; 41/61/312.20.50 NiCE; ZURICH; MARCEL WALDVogEL; 41/1/311.89.03 PRILLY; DANIEL ALLGOEWER; 41/21/25.80.07 OXFORD; PAUL BEAUMONT; 44/844/283.32 NOTTINGHAM BULLETING BOARD; 44/602/45.54.44 GNASH; SHEFFIELD; MALCOLM CRAWFORD; 44/742/76.85.55 EXT. 5577 UNIVERSITY OF YORK; NIGEL METHERINGHAM; 44/904/43.23.74 QUEENS UNIVERSITY; BELFAST; RON PERROTT; 44/232/24.51.33 COMPUSeRVE NeXT FORUM UK Sysop; BUCKS; PAUL LYNCH; 44/94/67.15.01 UNIVERSITY OF YORK; IAN STEPHENSON; 44/904/43.00.00 EXT. 2381 UOENUG; COLCHESTER; PAUL CHERNETT; 44/206/87.20.48
FINLAND	
FRANCE	
GERMANY	
GREECE	
HUNGARY	
IRELAND	
ISRAEL	
ITALY	
MACEDONIA	
NETHERLANDS	
NORWAY	
POLAND	
PORTUGAL	
SLOVENIA	
SPAIN	
SWEDEN	
SWITZERLAND	
UNITED KINGDOM	

CANADA

ALBERTA	CLUB NeXT; CALGARY; VINCE DEMARCO; 403/274-4002 CALGARY; GASTON GROISMAN; 403/220-6783 NEON; EDMONTON; GEORGE CARMICHAEL; 403/492-2462
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BRITISH COLUMBIA	SIMON FRASER GROUP; WEST VANCOUVER; RORY GIBSON; 604/922-5643 V-NUS; UBC; VANCOUVER; ROBERT WONG, JR.; 604/322-6918 V-NUS; VANCOUVER; BOB BAIWA; 604/822-2928 WINNIPEG; RICHARD TILLEY; 204/474-9738 St. JOHN'S; MEMORIAL UNIVERSITY; TIM SEIFERT; TSEIFERT@MORGAN.UCS.MUN.CA NS2; HALIFAX; CHRISTOPHER MAJKA; 902/425-3725 BEDFORD; TODD ROSE; 902/835-1028 TANG; TORONTO; DAN O'CONNELL; 416/365-1899 UGNUG; GUELPH; MICHAEL ELLIS; 519/824-4120 UNIVERSITY OF WESTERN ONTARIO; LONDON; FRANK VANDONGEN; 519/858-0817 NeXTACTIVE; NEPEAN; KEVIN FORD; 613/225-4842 MacNUG; HAMILTON; PASCAL GAUDETTE; 416/525-9140 EXT. 3184 SUDBURY; ANDRE ROBERGE; ANDRE@GOLLUM.PHYS.LAURENTIAN.CA MONTREAL NeXT; ROBERT PAULHUS; 514/939-0382 McGILL UNIVERSITY; MONTREAL; PETER DEUTSCH; 514/398-3709 CONCORDIA UNIVERSITY; MONTREAL; STEFANOS KIAKAS; STEFANOS@CONCOUR.CS.CONCORDIA.CA MISHKIN BERGEIT; SASKATOON; 306/343-6692 NUGYT; WHITEHORSE; RICHARD LAWRENCE; 403/668-6280
MANITOBA	
NEWFOUNDLAND	
NOVA SCOTIA	
ONTARIO	
QUEBEC	
SASKATCHEWAN	
YUKON TERRITORY	

UNITED STATES

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REINVENTING NeXT

STEVE JOBS GOES ON THE
RECORD ABOUT
TECHNOLOGY, MARKETING,
AND ROSS PEROT

I N T E R V I E W

By May 1992, NeXT had completed its transition to a marketing strategy based on object technology and custom development. Steve Jobs was by turns evangelical, combative, and reflective as he sat down with NextWorld Editor in Chief Dan Ruby for a wide-ranging discussion.

NeXTWORLD: It's been six years since NeXT was founded. Are you where you thought you'd be?

JOBS: No, I would say we're behind where I thought we would be. Not so much because we're much different than a lot of companies, but I'm impatient. I think we're like a year behind where I'd like to be.

We changed the whole strategy of our company last fall. We changed our marketing strategy. We changed our sales focus. We've been focused consistently on mission-critical custom apps for a little over six months and it's really working.

Why is custom apps such a potent idea?

Getting applications written is the number one problem in corporate American information technology. And even though we're downsizing to client-server computing and the apps are on the desktop, the bottleneck is still getting them written.

This is even more true when customers want to use computers for operational productivity as opposed to management productivity. You can't buy shrinkwrapped software to do stock trading or run your hospital or do order processing. You've got to write custom apps. Now, in the past, these operational applications were written in COBOL or some more modern language on a mainframe

or minicomputer. Starting in the very late '80s, some companies started downsizing to client-server computing. They could buy a Sun and spend like two years writing a good app, or as good as you could write on a Sun. Now, we roll in and say, look, you can write that custom app five to ten times faster on a NeXT.

Who is writing all these apps? Is the market large enough to support a company like NeXT?

It's incredibly important in some markets. Take financial services. When they roll out a new product it's only three things: an idea, a sales force, and a custom app running on a desktop banging SQL databases on a server. Without the app there's no new product.

Take health care, which is starting to explode. People in that industry are starting to realize they have to automate the core operational activities of that business. Or legal, which we think is a very ripe environment for writing some custom tools.

These are vertical markets, but we view custom apps as a horizontal benefit in the same way that desktop publishing was in 1985. Eventually, everybody is going to realize they need to have mission-critical custom apps.



The custom-apps strategy tends to de-emphasize the need for third-party apps.

No. I disagree. There was some concern at first on the part of our third-party developers. But we're finding that it's actually helping to sell more apps. When Apple focused on desktop publishing, Microsoft sold more spreadsheets because desktop publishing was the Trojan horse that got the Mac into corporate America. So mission-critical custom apps is the tip of our arrow, getting us into these major corporate accounts.

Some people have said that custom apps is a really smart strategy that gets NeXT's foot in the door, but that it needs to be followed, or supplemented, by some other approach.

Well, I would say two things. Number one, we didn't make up mission-critical custom apps. Our customers told us this. So this is a strategy that's being generated by the marketplace, not by some marketing person in some secret room at NeXT. We've hit bedrock. There's a fundamental need that's about to explode out there in the marketplace that requires object-oriented technology. And we've got a three- to five-year lead on any competitor.

Now, does that mean mission-critical custom apps aren't going to get supplemented with other things? Of course not. We have the best collaborative-computing environment in the world.

What you used to call interpersonal computing (IPC).

You could give it any name you want. You could call it groupware.

You could call it interpersonal computing.

What do you call it these days?
Well, that's not the big question. It's not running around trying to not run into custom collaborative computing. The way people are saying it is...

So we have this word. It's the PC that everybody got it today. And when you have a custom-app oriented computing environment...

But the issue is, how do you get people before they use it? It's a hard time articulating a hard time understanding a very new thing and talking about it yet.

But in terms of future mission-critical custom apps, is the story still viable?

Oh, it's real. It's absolutely real. Different customers buy different things. Some are weighted toward desktop publishing and they're interested in collaborative computing. Other customers are interested in writing something someday.

Let's shift away from mission-critical custom apps at the business. In terms of the future, sometimes people throw out a billion dollars a year. What's your goal?
I don't think in those terms. \$250 million, \$300 million, '91 and I'd like us to get there. I think we will.

There's been a lot of change in the current one is you're talking about.
Sure. There have been a lot of changes. The formation of the Harvard Business School bringing in Marcel G. P. as president of marketing, and then Lenburg as our chief of marketing.

What I want Peter to do is to be a more effective engine, distribution strategy. It's kinds of things Peter's doing. He's concentrating more on things...

I N T E R V I E W

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You could call it interpersonal computing. You could call it collabor-
ative computing.

What do you call it these days?

Well, that's not the biggest problem. The problem is that people are
not running around thinking they have a problem. In other words, I
don't run into customers who are pulling their hair out saying my
collaborative computing environment isn't good enough, not the
way people are saying they have to get their custom apps done faster.

So we have this wonderful thing, this collaborative environment.
It's the PC that everyone hopes is the PC of the mid-1990s. We've
got it today. And when people use it, they love it. Even our most
custom-app oriented customers fall in love with the interpersonal
computing environment on the NeXT.

But the issue is, how do we communicate how great it is to peo-
ple before they use it? We aren't alone in this. Lotus is also having
a hard time articulating what Notes is, and the market is having a
hard time understanding it. So this whole idea of collaborative work
is a very new thing and the marketplace doesn't have a language to
talk about it yet.

**But in terms of future messages, the IPC
story is still viable?**

Oh, it's real. It's absolutely real. Dif-
ferent customers buy our computers
somewhere along a spectrum. Some
are weighted toward the custom app
and they're interested in the collabor-
ative computing. Others buy it for
collaborative computing and they're
interested in writing some custom apps
someday.

**Let's shift away from marketing and look
at the business. In terms of numbers,
sometimes people throw around the fig-
ure of a billion dollars as a milestone to
be reached. What's your timetable?**

I don't think in those kinds of terms. I think in terms of \$200 mil-
lion, \$250 million, \$300 million. You know, we did \$128 million in
'91 and I'd like us to produce some healthy growth this year, which
I think we will.

**There's been a lot of change in the management structure at NeXT. The
most current one is you've just brought in a new COO.**

Sure. There have been four big changes in the last six months. The
formation of the Hardware Division with Rich Page running it;
bringing in Marcel Gani as our CFO; promoting Mike Slade to vice
president of marketing; and now we've brought in Peter van Cuy-
lenburg as our chief operating officer and president.

What I want Peter to focus on this year is making us opera-
tionally more effective. We have a very large investment in our sales
engine, distribution strategy, and manufacturing. Those are the
kinds of things Peter's very skilled in. This is freeing me up to con-
centrate more on things like our product and marketing strategies.

Okay, let's talk about products. Is NeXT a hardware or a software company?

I would say that the introduction of NeXTSTEP '486 is clarifying,
both inside NeXT and for the outside world, the strategic model
that we've always had. We're a software company that happens to
make great hardware. We have never for a moment thought that
our true competitive advantage ultimately wasn't software. It is.

So NeXTSTEP '486 will come out, and who knows, maybe
other versions of NeXTSTEP will come out. I think NeXTSTEP
'486 is going to be very successful. We're getting help from a lot of
companies from almost every facet of the PC world. They want to
ensure that there is a choice and they see NeXTSTEP as a really
good choice.

When should we expect to hear some word on who will be supporting it?

A lot of things are already completed but we don't feel a need to
announce them right now, and we can get an even broader base of
support in the meantime.

Will NeXTSTEP 3.0 be out by the time this interview is published?

Well, we were about two to three
weeks late going into beta, which
probably means shipping it may slip
into early July.

With all announced features intact?

The government may not let us
export encryption. But everything
else is there.

**Of all the new features in 3.0, which ones
do you get most excited about?**

Well, DBKit would have to rank
number one for the customers. It's a
breakthrough technology that's only
possible on top of our object-oriented
framework. Number two is probably
the integration with Novell and
AppleShare, which provides bridges

to our customers' existing environments.

As for my own point of view, I believe that we've made incredi-
ble strides in color. Also, the object linking and distributed-object
technology is profound. We're several years ahead of Apple, Micro-
soft, and OMG (Object Management Group) in distributed objects
and object linking. And while that isn't going to be apparent the
first day we ship, because apps that take advantage of it are yet to
be written, a year down the road that may well emerge as the most
profound technology in 3.0.

The 3DKit is also going to be interesting for business presenta-
tions and some very exciting CAD stuff. It is also going to take a
year to blossom in terms of the apps, but I expect a lot out of 3DKit.

**When you introduced 3.0, you gave the impression that we really needed
more powerful machines to take advantage of 3-D technology.**

Well, that's not true for photo-realistic rendering of single frames. As
for Interactive RenderMan, you're correct that to really challenge

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the Silicon Graphics (SGI) of the world, we'll need the next generation of hardware. But a lot of apps are going to get written on the current hardware, so we've gotten the development process started a little sooner.

Now that we are talking about future performance improvements, what can you say to users about what they might expect?

Over time we'll broaden our hardware line to include, in addition to the current products we ship, computers with even greater performance. That's no secret. These products will cost more, but I don't think anybody will have anything on us from a performance point of view.

You have somewhat limited pockets to develop or acquire lots of different kinds of new technologies. How do you stay competitive?

The most important advanced technology that we're working on is object-oriented software. It's far more important to us than most of the other sort of sizzle that people talk about. You have to choose carefully what you invest in and then stick with it. For us, object-oriented technology is at the top of the list.

What's happening is that companies are now selling objects for NeXT. We're focusing a lot of resources there because we believe very strongly that this is the future. NeXTSTEP is the only software platform that can really support the creation, sale, and use of other people's objects. That is very important in the competitive battle as well as in helping customers in creating a whole new subindustry.

Your competitors say that NeXT objects are not standard – that they aren't portable to other object environments.

They are portable to NeXTSTEP '86 and any other version of NeXTSTEP. As you know, we've shipped around 50,000 object-oriented computers, and right now that's more than everybody else times five. So right now we're the standard, and OMG simply addresses some very low-level issues. Other object standards will appear as other people start shipping object-oriented computers, which we don't see happening any time soon.

It's interesting that you've identified this custom-apps market and suddenly we see other companies also talking about that.

Taligent has almost copied our marketing literature, which is fine.

When do you expect a Taligent operating system to be released?

In 1995. They might release some beta stuff in '94. And we suspect very strongly that the first release of something will probably not even be as good as NeXTSTEP is today and will have to be tuned. That's assuming they even ship a product.

You have some doubt that they will?

Well, the last thing [Taligent CEO Joseph] Guglielmi worked on was Office Vision, when he spent \$300 million and never shipped anything. So who knows what will happen. I wish him the best.

Microsoft NT seems to be targeting custom apps as well.

No, NT is very different. NT is just Microsoft's second attempt at a UNIX wannabe. It's better plumbing for Windows, but you're still stuck with the Windows development environment, which, if you talk to developers, most say is the worst development environment ever created. So I don't think that you're going to see NT going after the custom-app business.

Remember, the actual operating system is only 10 percent of what NeXTSTEP is. Operating environment is a better term. In order to set object models and really be a player in it, you've got to do the other 90 percent. So NT gets you 10 percent of the way there. I don't see that changing very much over the next few years.



Even as they develop higher-end systems?

We're not seeing it happen. NT will offer better networking eventually, but the whole PC world is locked into Novell anyway.

Microsoft seems be developing a relationship with DEC that looks like it might be more formidable than the ACE coalition would have been.

If you believe that DEC will be more formidable in the future then you would say that might be true. It's hard to say what's going to happen with DEC.

People are very excited about their Alpha technology.

We're thoroughly familiar with their Alpha technology, and I see it in the same ballpark as HP's technology. If you look at the real performance of Alpha, it's good but it's no better than what HP and others, possibly including NeXT, have in store for 1993.

Okay. The mother of all competitors is Sun Microsystems. Let's discuss this war of words or whatever it is that you've got going. Some people think that you picked the fight.

Oh, absolutely not. This is far more than a war of words. Scott McNealy is keeping the airlines in business. Every time we're about to close a deal he flies out and tries to talk the customer out of it. He did it with the L.A. County Sheriff. He did it at Phibro. He did it recently at Citicorp, where we just won a big order against Sun. Sun is trying to stop us with everything they've got. Fortunately, they're not succeeding because they don't have a competitive product.

Has it reached the point

The slander sheet they don't do business that McNealy any time, ar

In the meantime, NeXT h

We are absolutely goin We are not standing st of business and Apollo that we have to act an

How about Apple? And r

tive. How are they doing? Well, I think that anyb little bit in this environ doing okay. I think tha company for computer Macintoshes but the C is putting its best peop end of their line, and t is withering. Look, they Taligent. They took Pir an internal Apple tecl basically threw it out.

Well, they spun it off into a

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In general, what's your fee
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How about MS-DOS?

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Has it reached the point of personal animosity?

The slander sheet they put out was a personal attack on me. We don't do business that way. But I have offered to debate Scott McNealy any time, any place, if he wants to talk about the issues.

In the meantime, NeXT has been pretty aggressive itself.

We are absolutely going on the offensive as a result of their actions. We are not standing still over this. We watched Sun put Apollo out of business and Apollo had better products than Sun, so we know that we have to act and not dismiss this as unimportant.

How about Apple? And not as a competitor, but from your unique perspective. How are they doing?

Well, I think that anybody who's managing to survive and grow a little bit in this environment is doing well, so I would say Apple's doing okay. I think that Apple wants to be the consumer-products company for computers. As an example, PowerBooks are very good Macintoshes but the Quadras are terrible. So it's obvious that Apple is putting its best people on the low end of their line, and their high end is withering. Look, they basically sold Taligent. They took Pink, which was an internal Apple technology, and basically threw it out.

Well, they spun it off into a new company.

Right, which is not what you do with your company jewels. So from my point of view, Apple was at a fork in the road for a long time, and they finally chose a path of becoming the Sony of computers. That's probably an excellent choice for Apple, but it means that there are going to be a certain number of people at the high end of Apple's market that are over time going to feel disenfranchised.

One of the interesting things as we look at the development of future operating environments and advanced systems is that there are a lot of coalitions that form and then sometimes break up as well.

Right. ACE has fallen apart. The only people seriously using MIPS processors is SGI. So SGI just bought itself a processor division.

In general, what's your feeling about alliances?

Well, name one really successful product that came from an alliance.

How about MS-DOS?

No. That wasn't an alliance. MS-DOS came from Microsoft. I can't think of one successful product in the history of our industry that ever came from an alliance. Or any other industry, either. Toyota and GM - no. I'm sure there are some examples but they're not standouts. So that's my answer. That's also why Taligent may never ship a product.

We work together with tons of people. We work together with customers, we work together with developers, we even work together with competitors sometimes. But the statistics are not in favor of these industry alliances.

Let's expand this discussion beyond NeXT and the computer industry. A lot of people are interested in your thoughts about Ross Perot and his presidential candidacy.

I think he's got a real chance and I'm helping him every way I can.

Such as?

I'd rather not go into details. But I think Ross would be an excellent president.

Why?

Leadership. He chooses very good people around him, and he is able to distill out of his troops and himself a clear vision. Then he's able to articulate that vision well to a large number of people.

What's wrong with our country is that we haven't put the energy or resources into developing our collective values. We have to take some time and ask, "What are the ten most important things that we want to do as owners of this country?" and then go figure out how to do them.

For as long as I can remember, the only real leader that was able to communicate a vision was John F. Kennedy. I remember watching him on TV when I was six, seven, eight years old. When he said let's put a man on the moon and bring him back in this decade, that was a vision that a scientist, an historian, and a gas station attendant could understand, each in his own way.

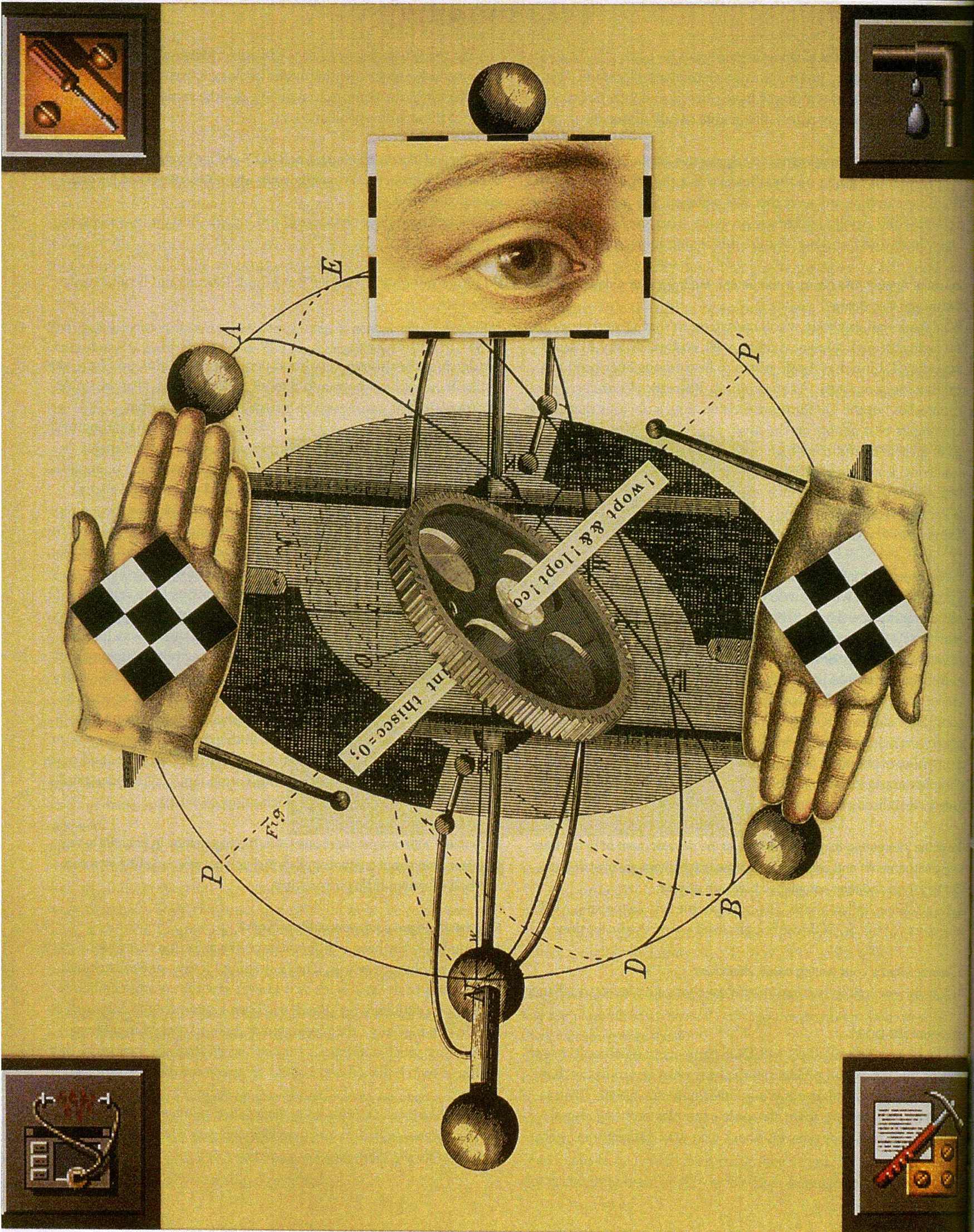
"IT'S OBVIOUS APPLE IS PUTTING ITS BEST PEOPLE ON THE LOW END OF THEIR LINE, AND THE HIGH END IS WITHERING. THEY TOOK PINK AND BASICALLY THREW IT OUT."

Let's finish with one personal question. The big change in your life in the last year, aside from custom apps, is that you got married and had a son. We had our own little custom app.

Has that changed your view of life or work?

Having Reed has been a different experience for me that I won't even attempt to put into words. The only thing I'll say - the only thing I really think I can say - is it's as if I never saw the color green before and all of a sudden when Reed was born I could see the color green. It didn't change any other color, but it changed everything. I love NeXT very much and have a very strong drive to see it succeed. But it's like a switch flicked and I could see green for the first time. ♦

Photographer JULIE CHASE filmed Steve Jobs with a 1/2" Beta video camera. Frames from the video were captured with a NeXTdimension board and Keith Ohlfs's NeXTtv software.



WHEN KARL FANKHAUS, manager of the Steel plant in Richmond, Va., needed a way to manage the production of NeXT machines in California, he developed his own.

As manager of information systems, Fankhaus had to develop three programmers and a forecast and manage production, and a host of tasks. The programming was done by Fankhaus together all of Pinole Point, Calif., to forge a completely integrated system.

The business of custom software is just developing productivity tools for the development of custom apps to house the businessware to comprehensively manage Pinole Point's business. They're developing the mechanical custom app.

Pinole Point is not alone in the use of NeXT's biggest customer, using NeXTSTEP development tools to build in-house software to automate their business. But as more and more firms develop mission-critical custom software, their strategies, problems, and results vary. Importantly, questions arise about what "custom" and "mission-critical" really mean, how development should take place, the role of feedback, and the mandate for information systems (IS) departments. The only common denominator among developers using NeXTSTEP is enthusiasm: "No other environment is as user-friendly as NeXTSTEP. I think it's the greatest thing


An a

ENDORSEMENTS LIKE FANKHAUS'S, Steve Jobs, who heralded NeXTSTEP in his keynote at NeXTWorld, are pushing NeXTSTEP's friendliness as a major marketing tool, taking *Journal* urging companies to "Never Copy." And, unlike NeXTSTEP, being positioned to push the black box has that capability.

Mission-critical apps can be developed in the highly competitive financial services market. An IS director at a bank says he's "shops." Another was more direct: "We don't want our competitors to know we're using NeXTSTEP."

Secrecy about custom software is a common theme.

ILLUSTRATION BY MALCOLM TARLOFSKY



WHEN KARL FANKHAUSER LOOKED AROUND THE SPRAWLING PINOLE POINT Steel plant in Richmond, California, shortly after getting his first shipment of NeXT machines in October 1991, he saw manufacturing and administrative needs that couldn't be met by conventional software. So he developed his own.

As manager of information systems, Fankhauser put together a staff of three programmers and built a process-line scheduling program that helps forecast and manage production rates, galvanizing, organic coating, inventory, and a host of tasks particular to Pinole Point's specific line of steel products. The programming team is now developing other applications to tie together all of Pinole Point's 55 NeXT machines, in every major department, to forge a completely integrated computing environment for its business.

The business of custom apps *is* business. Fankhauser and his team aren't just developing productivity tools for individual workers; they're building a suite of custom apps to house an entire steel plant's operations. They're using software to comprehensively support Pinole Point's business mission. They're developing the mission-critical custom app.

Pinole Point is not alone. Many of NeXT's biggest customers are using NeXTSTEP development tools to build in-house software to automate their business processes. But as more and more firms develop mission-critical custom apps, their strategies, problems, successes, and results vary. Important questions arise about what terms like "custom" and "mission-critical" really mean, how development should take place, the role of user feedback, and the mandate of information systems (IS) departments. The only common denominator for developers using NeXTSTEP seems to be enthusiasm: "No comparable environment is as user-friendly. We all think it's the greatest thing since sliced bread," says Fankhauser.

An app is an app is an app?

ENDORSEMENTS LIKE FANKHAUSER'S ARE PROBABLY MUSIC TO THE EARS OF Steve Jobs, who heralded the era of "mission-critical custom applications" in his keynote at NeXTWORLD Expo in January. By spring, NeXT was pushing NeXTSTEP's friendly-yet-powerful development environment as its major marketing tool, taking out full-page advertisements in the *Wall Street Journal* urging companies to "Build a Weapon Your Competitors Can Never Copy." And, unlike machines from NeXT's competitors (which are being positioned to push the message of custom-applications development), the black box has that capability now.

Mission-critical apps can be so strategic that many firms, especially in the highly competitive financial industry, won't even talk about them. One IS director at a bank says he's "afraid of losing good programmers to other shops." Another was more blunt: "Most of this work is proprietary. We don't want our competitors to know what we're doing."

Secrecy about custom apps only underscores the fact that many corpo-

rate developers, in a variety of industries, are heeding Jobs's call. Traders at oil-commodities giant Phibro Energy are starting to use a real-time risk-management system developed in-house. Phibro has also spun off a software-development company, mc² technologies (see "NeXT buyers become sellers," *NeXTWORLD Extra*, March 1992).

Peter Armstrong, vice-president of mc² technologies, says that his programmers had to develop custom software because of the unique nature of the oil-trading business. "There was nothing out there to cover the energy market. The physical aspects of the market – shipping, pipelines that break down, even political developments – are so complex that there were no apps to pick from, on any platform," he says. In six weeks, he and five other programmers developed four applications: an option-quoting tool that gives clients instantaneous risk assessment; a graphing program to compare resource energy products in thousands of markets over different seasons and price series; a multimedia phone book and calendar; and a trade-capture

app that has since become the cornerstone of the large risk/management system being marketed by mc² technologies.

Armstrong and his team built "hundreds" of objects during the development process that can be reused and combined to produce more applications. The contact manager, for example, was an eye-opener for Armstrong because he "looked at the shrinkwrapped products already out there, but again, none of them met our needs. They weren't energy-specific, and even though we could have saved time and bought one, there was only one or two on the market. So we leveraged our object work and built our own," he says. His team was able to not only customize the ideas behind

contact-management software but to produce a robust app that can incorporate spreadsheets, images, word-processed documents, and faxes – all with access to the risk-assessment tools of other in-house software and features, like the Colors panel, that are inherent in the NeXTSTEP environment.

Reusing objects offers companies the double benefit of tying together various parts of their businesses with common, underlying functionality or even marketing their finished software, while in-house programmers can easily customize versions of the same software – changing interfaces or operability, say, for back-office versus front-office users.

This offers a level of functionality that shrinkwrapped apps can't approach, according to Eric Bergerson, managing director at Objective Technologies (OTI) in New York, the first commercial vendor of object-extension palettes for Interface Builder. He likens objects on the NeXT to a Lego set that contains basically two kinds of pieces: blocks, and doors and wheels. The blocks are simple objects, while the doors and wheels are higher-order objects. "You can use pieces of both sets to build a helicopter, for example, and then dismantle the helicopter and use those and other pieces to build a four-wheel drive vehicle," he says.

Mission CONTROL

Beyond NeXT's sloganeering, customers are deriving real

ADVANTAGES FROM MISSION-CRITICAL CUSTOM APPS

by Eliot Bergson

ILLUSTRATION BY MALCOLM TARLOESKY

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lars over a 20-to-30 year
Ve really focus on repre-
en by → PAGE 84

SCREEN BY ERIC BERGERSON

S A F E O R

S O R R Y

TAKE NIKE'S ADVICE FOR BACKING UP YOUR NETWORK JUST DO IT

BY DANIEL MILES KEHOE AND SETH T. ROSS



PHOTOGRAPH BY DAVID MAGNUSSEN

You come back from lunch and move your mouse but the cur-
sor on the screen won't budge. Your NeXTstation is frozen. You
attempt to reboot but it fails. You smell smoke. You open the
case and discover that your hard disk has literally burned up
and all of the data on it is gone. Can you restore your data? ♦
Be it earthquake, fire, flood, human error, attack by crackers
there's only one way to protect against the long list of hardware
human, or heavenly failures: Make sure that the data on your
computer is backed up - archived - onto a tape or optical disk
(OD) with copies taken off-site on a regular basis. ♦ A solid
backup routine requires the proper hardware and software
described in this article. Suggestions for sound backup prac-
tices are offered in "SysAdmin: Hints and Tips" in this issue

CLOCKWISE FROM TOP: MAYNARD ARCHIVIST 2000, TEN X TECHNOLOGY OPTIXCHANGE 940, TFCOR HP 35480A,
MICROTECH INTERNATIONAL ECLIPSE 2.0T, MICRONET TECHNOLOGY MD-5000, AND EXabyte EXR-8500

MULTIPLE CHOICE

NeXT users face a bounty of mass-storage and backup possibilities – thanks to NeXT’s industry-standard SCSI interface (see the chart, “Ways and Means,” for profiles of common backup media). Naturally, different hardware options have different costs and capacities.

Many sites with original NeXT-cubes rely on their internal ODs, even though the device is no longer sold or supported by NeXT. Users who work on stand-alone NeXT-stations often rely on 2.88MB floppy disks for back up, but backing up more than a few megabytes can quickly become unmanageable.

Tape drives – using either digital audio tape (DAT) or the popular 8mm videotape Exabyte mechanism – are great for unattended overnight backups because their gigabyte (GB) data capacities can comfortably house entire NeXT file servers.

DAT drives from a variety of manufacturers use tapes in the Digital Data Storage format developed by Hewlett-Packard and Sony. They typically achieve a sustained data transfer rate of 10MB per minute, allowing a NeXTstation user to back up a typical 300MB of data in 30 minutes or less. Prices range from \$1500 to \$3600.

We evaluated DAT drives from several suppliers and found few dif-

ferences among them. Several manufacturers offer hardware-based data compression, doubling or quadrupling data capacities beyond standard 1.3GB or 2.0GB sizes. DAT drives with compression circuitry allow you to pack more files onto a tape, if your data is not already compressed, but any savings in the cost of media are offset by the often-higher cost of the drive. DAT compression also increases the chance that your crucial backups may be corrupted, though drive manufacturers claim that additional error-correction circuitry adds reliability.

Exabyte drives are favorites at larger NeXT sites. Storage capacity – 5GB uncompressed on the Exabyte EXB-8500 drive – is one reason. A fast sustained-data-transfer specification is another. In practice, however, Exabyte’s potential 500KB/sec transfer rate is limited by the speed of the NeXT SCSI bus. With the current generation of NeXTstations, you’ll see the Exabyte stopping and starting, unable to reach its full “streaming” tape speed as it waits for data to reach it from the NeXT.

Both the Exabyte EXB-8500 and DAT tape drives allow for fast seeks. With the right supporting software, such as Systemix Software’s SafetyNet, a system administrator can find a specific file any-

where on a tape in less than a minute and restore the file a few minutes later. (Those who use UNIX **tar** and **dump** commands can expect much longer waits.)

If ultimate data integrity and speed of access is of concern to you, consider OD drives with mechanisms manufactured by Sony, Ricoh, or Panasonic. These systems offer capacities of up to 1GB on a single disk and split-second access to single files you need to restore. Unlike tape drives, you can boot a damaged system off an OD.

We evaluated the OptiXchange 940 OD drive from Ten X Technology. It supports two kinds of disks: 940MB WORM (Write Once Read Many) disks and 1GB rewritable disks. The WORM disks can be used for monthly whole-disk backups, while rewritable disks can be used for daily incrementals. The drive supports transfer rates almost five times as great as the NeXT OD drive. At a list price of \$5495, though, this is clearly the high-end.

Inexpensive D/CAS data cassette tape drives deserve special mention. The 600MB capacity of these devices are well matched to the 400MB or 660MB drives of single-user NeXT computers. For about \$800, a lone NeXT user can acquire the means for tape backup. At this price, there’s no excuse for not deploying a backup strategy.

THE SOFT SIDE

Backup utilities ship with every NeXT computer: the UNIX **tar**, **compress**, **dump**, and **restore** commands. The tape archiver, **tar**, packages a group of files into a single large file that can be automatically written to tape. It also unpacks files on command but is most useful when you need to save a few files or directories to disk and move them to other computers. To save space on backup media, **tar** is often used in conjunction with **compress**, resulting in files with the familiar **.Z** suffix.

The **dump** command moves entire file systems onto backup media, saving a snapshot of the directory structure. But instead of organizing the files by name, **dump** organizes the files by index number (i-nodes). It maps i-nodes, then reads raw data blocks off disk to tape, making **dump** the fastest way to copy a file system. It also performs incremental backups by checking the **/etc/dumpdates** file. For whole-disk and incremental backups, **dump** is the utility of choice for system administrators.

UNIX jockeys need no other tools to effectively back up their systems. With a basic knowledge of UNIX, you can use shell scripts to automate regular backups. You can also use **cron** and **/etc/crontab** to automatically back up your system

while you sleep.

Unfortunately, the UNIX commands are loaded blunderbuss, unwieldy to use, archaic in functionality, and dangerous in the hands of a novice. For example, each **dump** command must use a set of keys chosen from a dozen function modifiers. The convoluted syntax makes typing easy: Mix up a file-system name, a tape-drive device name, and a file type to wipe clean an entire file system.

Worse, **tar** and **dump** have idiosyncrasies that NeXT users must learn to fix. For example, **tar** can back up files that have paths of over 100 characters. A tape program is **gnutar**, available from NeXT.

WAYS AND MEANS

Format	Popular Brands	Transfer Rate	Media Capacity	Drive cost	Media cost	Notes
9-track open-reel tape	Cipher Data, M4 Data, Qualstar	2MB to 4MB/sec	150MB	\$3000	\$65	An ancient standard
VHS tape	Metrum Information Storage	2MB/sec	14.5GB	\$33,000	\$19	Typically for mainframes
Magneto OD (NeXT)	Canon	1.5MB/sec	256MB or 512MB	N/A	\$175	Supplied with first NeXTs
Magneto OD (3.5-inch)	Sony, IBM	3MB/sec	128MB	\$1400	\$49	Millisecond file access
Magneto OD (5-inch)	Ricoh, Sony, Maxtor	1.5MB/sec	600MB to 650MB	\$1900 to \$2800	\$125	Millisecond file access
Multifunction WORM OD	Panasonic	860KB/sec	1GB	\$5500	\$49 to \$149	Millisecond file access
1/4-inch tape (DC-6000 cartridges)	QIC-24 to QIC-1350 standards	5.4MB to 36MB/min	60MB to 1.35GB	\$1000 to \$5000	\$49 to \$99	Popular with PC users
1/4-inch tape (DC-2000 minicartridges)	QIC-80 standard, Irwin format	10MB/min	250MB	\$350 to \$1200	\$30	Popular with PC users
8mm helical-scan video tape	Exabyte	500KB/sec	2.2GB or 5.0GB	\$2000 to \$4000	\$18	Popular with Sun users
4mm helical-scan DAT tape	WangDAT, Archive Python, HP	10MB/min	1.3GB to 2.0GB	\$1500 to \$3500	\$16 to \$29	Popular with NeXT users
D/CAS data cassettes	TEAC	15KB to 30KB/sec	155MB or 600MB	\$600 to \$900	\$38	Popular with Mac users
Bernoulli removable cartridge	Iomega	1.5MB to 2.5MB/sec	44MB or 90MB	\$800	\$88 to \$145	Millisecond file access
SyQuest removable hard disk	SyQuest	750KB/sec	44MB or 88MB	\$450 to \$600	\$65 to \$109	Millisecond file access
21MB 3.5-inch floptical	PLI, Liberty, Prima Storage	1.5MB/sec	21MB	\$700 to \$750	\$23	Inconvenient for back up
2.88MB 3.5-inch floppy	NeXT, IBM	1.25MB/sec	2.88MB	N/A	\$7	Inconvenient for back up

BACKUP HARDWARE

	MicroNet Technology
Tecor	HF-2000
	WORM
	An
	An
PLI	PLI
Park Systems	Sh
MicroNet Technology	MD
Microtech International	Ecl
Exabyte	EXI
Maynard	Arc
APS	APS
	APS
Ten X Technology	Opti
Contemporary Cybernetics	CY-2
	CY-2

THE SOFT SIDE

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Notes
An ancient standard
Typically for mainframes
Supplied with first NeXTs
Millisecond file access
Millisecond file access
Millisecond file access
Popular with PC users
Popular with PC users
Popular with Sun users
Popular with NeXT users
Popular with Mac users
Millisecond file access
Millisecond file access
Inconvenient for back up
Inconvenient for back up

while you sleep.

Unfortunately, the UNIX commands are loaded blunderbusses – unwieldy to use, archaic in functionality, and dangerous in the hands of a novice. For example, each **dump** command must contain a set of keys chosen from over a dozen function modifiers. The tortuous syntax makes typing errors easy: Mix up a file-system name and a tape-drive device name, and you can wipe clean an entire hard disk.

Worse, **tar** and **dump** have idiosyncrasies that NeXT has failed to fix. For example, **tar** cannot back up files that have pathnames of over 100 characters. An alternative program is **gnutar**, available

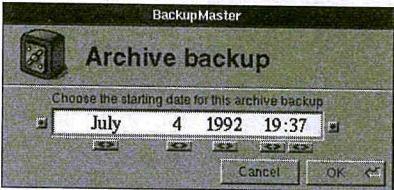
from the Free Software Foundation (FSF). Neither version of **tar**, nor **dump**, handles hard links well; they back up linked files, but restoring linked files can produce unexpected results. The biggest drawback to **dump** is its inability to recognize NeXT’s document wrapper files (a WriteNow document, for example, can actually be a directory that contains both text and graphics files). During an incremental backup, **dump** will save only the portions of the document wrapper that have changed, making it difficult to restore the document without reading several tapes. Finally, **tar** and **dump** can take as much time to restore a single file as is required to

restore everything on the tape, since they read the tape from beginning to end.

COMMERCIAL SOFTWARE

NeXT users expect applications that are transparent and easy to use. Fortunately, several software vendors have recently developed applications that address the ease-of-use and feature limitations of the UNIX utilities. We evaluated eight backup applications with a critical look at each application’s ability to archive and restore files, the use of NeXTSTEP conventions like drag-and-drop and the Services menu, the hardware media each supports, and the ability to automate the

backup process. *BackupMaster*, from Teledia, is a NeXTSTEP front end for **dump** and **restore**. It comes in two ver-



When you first fire up BackupMaster, it prompts you to make a backup. To back up all your files, enter the date you started using your NeXT.

sions: a floppy-only version for \$99 and a universal version for \$299 that also supports ODs, DAT, and 8mm tape.

When you start your first BackupMaster session, the program prompts you to pick among seven

BACKUP HARDWARE BUYER’S GUIDE

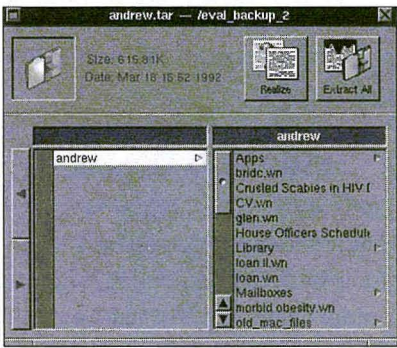
	Model	Category	Mechanism	Standard capacity	Capacity with compression	List price	Address
Tecor	HP 35480A	DAT	HP 35480A	5GB	8GB	\$1695	Tecor 237 Miramar Dr., Santa Cruz, CA 95060. 408/458-3197, 408/425-1804 fax.
	WangDAT 3200	DAT	WangDAT 3200	2GB	8GB	\$1595	
	Archive 4330XT	DAT	Archive 4330XT	2GB	N/A	\$1445	
	Archive 4352XP	DAT	Archive 4352XP	2GB	8GB	\$1545	
PLI	PLI 5GB DAT	DAT	WangDAT 3200	2GB	5GB	\$2699	Peripheral Land 47421 Bayside Pkwy., Fremont, CA 94538. 415/657-2211, 800/288-8754, 415/683-9713 fax.
Park Systems	Shadow Tape	D/CAS	TEAC MT2ST-F50	600MB	N/A	\$855	Park Systems Technology 10971 101st St., Edmonton, ALB T5H 2S9 Canada. 403/424-0530, 403/421-4039 fax.
MicroNet Technology	MD-5000n	DAT	WangDAT 2600	2GB	5GB	\$3595	MicroNet Technology 20 Mason, Irvine, CA 92718. 714/837-6033, 714/837-1164 fax.
Microtech International	Eclipse 2.0T	DAT	WangDAT 2600	2GB	5.7GB	\$2999	Microtech International 158 Commerce St., East Haven, CT 06512. 800/626-4276, 203/468-6223.
Exabyte	EXB-8500	8mm	EXB-8500	5GB	25GB	N/A	Exabyte Corporation 1685 38th St., Boulder, CO 80301. 303/442-4333, 800/392-2983, 303/442-4269 fax.
Maynard	ArchiveST 2000	DAT	Ardatt	2GB	N/A	\$3400	Maynard Electronics 36 Skyline Dr., Lake Mary, FL 32746. 407/263-3500, 800/821-8782, 407/263-3555 fax.
APS	APS 4196	DAT	Archive 4330XT	2GB	N/A	\$1499	Alliance Peripheral Systems 2900 S. 291 Hwy., Independence, MO 64057. 816/478 8300, 800/645-5401, 816/478-4596 fax.
	APS 4197	DAT	Archive 4352XP	2GB	8GB	\$1699	
Ten X Technology	OptiXchange 940	multi-function	Panasonic	1GB	N/A	\$5495	Ten X Technology 4807 Spicewood Springs Rd., Bldg. 3 #3200, Austin, TX 78759. 512/346-8360, 800/922-9050.
Contemporary Cybernetics	CY-8500	8mm	EXB-8500	5GB	25GB	\$4000	Contemporary Cybernetics Group 11846 Rock Landing, Newport News, VA 23606. 804/873-9000, 804/873-8836 fax.
	CY-2000	optical	Maxtor Tahiti	1GB	N/A	\$3000	

incremental backup strategies. Each strategy is based on a different hardware configuration, including floppy-only, optical-only, second-hard-drive-and-floppy, and so on. Surprisingly, tape drives are not included in any of the standard strategies.

Once running, BackupMaster presents a browser that lets you select file systems to back up. Since the application relies on UNIX restore, restoring from a tape drive is very slow. One strong point: BackupMaster can split **dump** files into floppy-sized pieces – making the task of backing up your entire system onto floppies less daunting.

BackupMaster makes **dump** very easy to use. We like the “strategies” approach to backup configuration, but it doesn’t justify the \$299 price. On the other hand, the \$99 floppy-only version is a convenient and economical solution for stand-alone NeXTs.

Tarre, from Aurora Software, is a handy NeXTSTEP tool for personal backups. It provides a graphical interface to the UNIX **tar** and **compress** programs, eliminating the need to go to the command line to



Tarre presents a window into your archives. You can either work on single files or extract the entire archive.

compress, uncompress, **tar**, or **untar** a file or directory.

Tarre supports drag-and-drop; just grab the icon for the directory you want to back up, drag it over the Tarre icon, and let go. Alternatively, you can archive or compress files from within the Workspace Manager or other applications via the Services menu. Tarre creates vanilla **.Z** files, which you can then copy to a floppy disk.

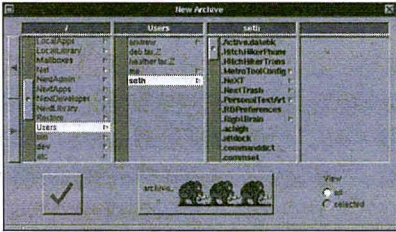
You can launch Tarre by double-clicking any **.Z** file. The program presents a browser-style panel for selecting items inside the **.Z** archive you wish to restore. This window on the archive’s contents simplifies the process of restoring a single file or group of files from a

large archive.

Tarre suffers from UNIX **tar**’s 100-character pathname limit. It has no automation features, nor does it provide on-line documentation. But at a list price of \$29.95, Tarre recommends itself as a simple and effective tool for quick file archiving.

EnTar, from Impact Software Publishing, is a NeXTSTEP front end for FSF’s **gnutar** and UNIX **compress**. The main interface is a large browser panel, called the Archive Browser, that allows you to readily select files and folders for archiving and retrieval.

EnTar supports floppy disks, ODs, and other removable media. Its specialty, though, is tape. It automatically configures SCSI tape



EnTar allows you to select folders to back up.

drives but also offers a manual configuration option.

EnTar’s use of **gnutar** rather

than UNIX **tar** overcomes the 100-character limit on the length of file pathnames, with some restrictions. At a list price of \$49, it represents a worthwhile alternative to the UNIX utilities for those responsible for backing up files to magnetic tape.

Swoop’n’Pack, part of Paget Press’s Swoop’n suite of utilities, is a bare-bones front end for **tar** and **compress** that is suitable for personal backups.

All the Swoop’n utilities work via the Services menu. To archive a folder, select it in the File Viewer and choose the Swoop’n’Pack op-



The Swoop’n’Pack utility reports on the results of **tar** and **compress**.

tion in the Services menu. The folder is packed on your hard drive, ready for transfer to a backup medium.

Swoop’n’Pack offers no support for drag-and-drop archiving, choice of backup media, or extraction tools for single files. Swoop’n has value as a \$49 package, but we can’t recommend the archiving application on its own.

Archiver, from MetroTools, is part of a grab bag of utilities. It’s spare to the point of almost being trivial. Select the Archiver option in MetroTools’ main panel, then drag-and-drop folders into the panel’s icon well on the left.

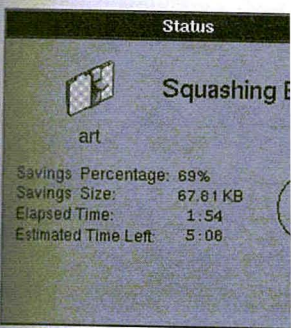


The Archiver is chosen in MetroTools’ main panel. Drag your folders and drop them into the icon well on the left.

they’ll be tarred and compressed. You can then copy to a backup medium.

While the \$129 MetroTools package is a boon for users who need its Macintosh migration tools, we’d rather use **tar** and **compress** straight from the command line.

Squash, from Agog, is the premier tool for backing up data on a stand-alone work-



Squash reports on the creation of one compressed bundle.

data on a stand-alone workstation. It’s the only application in our roundup that supports the UNIX utilities in favor of a proprietary file format, a potential roadblock for sharing files; **compress** has **tar** and **compress**, but only a handful of NeXT users have installed on their systems. Agog works around this problem by including a stand-alone compression application called UnSquash, which you can freely distribute. Squash further makes up for its defect by running faster and

BACKUP SOFTWARE RATINGS				
	Cubes	Comments	List Price	Contact
BackupMaster	◆◆◆	This front end for dump works for whole-disk and incremental backups. Its “strategies” approach helps users adopt sound backup practices.	\$299; \$99 (floppy-only)	Teledia, S.A. 121 Rue Chanzy, 59260 Lille-Hellemmes, France. 33/20/67.59.58, 33/20/47.99.45 fax; U.S.: 412/321-5850, 412/321-5851 fax.
EnTar	◆◆◆	This front end for FSF’s gnutar overcomes some of the weaknesses of UNIX tar and offers good tools for the configuration of SCSI tape drives.	\$49	Impact Software Publishing 210 Lake St., Ithaca, NY 14850. 607/277-8623, 800/822-3385; e-mail: impact@impact.shaman.com
MetroTools Archiver	◆◆	This grab bag of utility applications has value as a package, but the Archiver alone is almost trivial.	\$129	Metrosoft 712 Vanitie Ct., San Diego, CA 92109. 619/597-7518, 800/851-8665.
RunningBack	◆◆◆	A feature-laden application that’s bundled exclusively with Microtech’s DAT drive. It’s slow but offers formidable automation, scripting, and tape support.	N/A	Microtech International 158 Commerce St., East Haven, CT 06512. 203/468-6223, 800/626-4276.
SafetyNet	◆◆◆◆ (beta)	This prerelease version offers promise as the premier backup solution. It maintains a database that enables very rapid restoration of selected files from tape archives.	\$399 (network) \$99 (single-user)	Cuthie Software 8937C Early April Way, Columbia, MD 21046. 410/290-8813; e-mail: brian@beerwolf.umbc.edu
Squash	◆◆◆	This excellent tool for personal backups to floppy disk sports fast and efficient compression.	\$99.95	Agog 13780 N. River Hwy., Grand Ledge, MI 48837. 517/627-2186.
Swoop’n’Pack	◆◆	This simple front end for tar and compress is part of a package. The Services menu-based approach makes it easy to create quick backup archives.	\$49.00	Paget Press 2125 Western Ave. #300, Seattle, WA 98121. 206/448-0845; e-mail: aw@paget.com
Tarre	◆◆◆	This affordable front end for tar and compress supports easy archiving via drag-and-drop and the Services menu.	\$29.95	Aurora Software 16 N. Allen St., Madison, WI 53705-3924. 608/231-3679; e-mail: info@auroras.uucp@uunet.uu.net

tar overcomes the 100-limit on the length of files, with some restrictions. At \$49, it represents a file alternative to the UNIX tar those responsible for copying files to magnetic tape.

Swoop'n Pack, part of Paget Swoop'n suite of utilities, is a neat front end for tar and that is suitable for per-

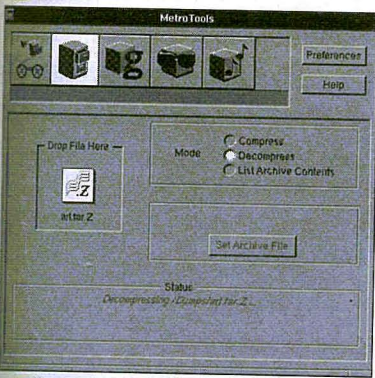
haps. The Swoop'n utilities work through a services menu. To archive, select it in the File Viewer or the Swoop'n Pack op-

Swoop'n Pack utility reports on the results of archiving.

Services menu. The folder on your hard drive, ready to a backup medium. Swoop'n Pack offers no sup- drag-and-drop archiving, backup media, or extrac- for single files. Swoop'n as a \$49 package, but we recommend the archiving on its own.

30 Lille-Hellemmes, France.
/20/47.99.45 fax;
412/321-5851 fax.
Publishing
NY 14850.
822-3385;
shaman.com
ago, CA 92109.
851-8665.
onal
ast Haven, CT 06512.
626-4276.
Columbia, MD 21046.
f.umbc.edu
Grand Ledge, MI 48837.
300,
206/448-0845;
n
son, WI 53705-3924.
uucp@uunet.uu.net

Archiver, from MetroSoft, is part of a grab bag of utilities called MetroTools. It's spare to the point of almost being trivial. Select the Archiver option in MetroTools's main panel, then drag-and-drop folders into the panel's icon well and

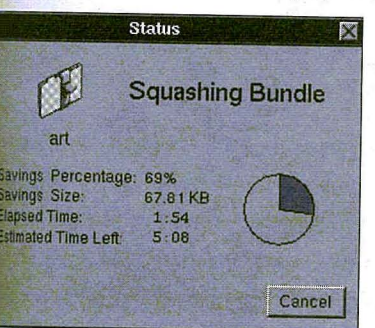


The Archiver is chosen in MetroTools's Preferences-like panel. Drag your folders and drop them into the icon well on the left.

they'll be tarred and compressed. You can then copy to a backup disk.

While the \$129 MetroTools package is a boon for users who need its Macintosh migration tools, we'd rather use tar and compress straight from the command line.

Squash, from Agog (\$99.95), is the premier tool for backing up



Squash reports on the creation of one of its well-compressed bundles.

data on a stand-alone workstation to floppy disks. It's the only application in our roundup that shuns the UNIX utilities in favor of a proprietary file format, a potential roadblock for sharing files; everyone has tar and compress, but only a handful of NeXT users have Squash installed on their systems. Agog works around this problem by including a stand-alone companion application called UnSquashOnly, which you can freely distribute. Squash further makes up for this defect by running faster and more

efficiently for most files than products based on the UNIX utilities.

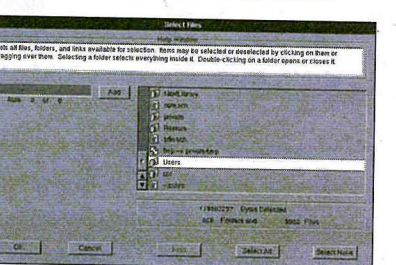
There are three ways to squash a file or folder: You can drag an icon from the workspace onto the Squash application icon; you can squash a file from within an application via the Services menu; or use the Squash command from within the Squash application.

Squash can automatically bundle and compress folders into archives and then split the files into floppy-sized pieces. A generous Preferences panel gives you the option to "Squash smaller but slower" or "Squash faster but not as much." You can also set up Squash to automatically back up old files.

For those who feel comfortable straying from the UNIX mainstream, Squash is the choice for automated, efficient floppy-disk backups.

RunningBack, developed by Neuron for sale with Microtech International's Eclipse 2.0T DAT drive, is the most fully automated backup application now shipping for the NeXT. It allows you to set up scripts for a variety of backup scenarios, including a timer script that runs RunningBack as a background task, performing unattended backups on schedule.

Though RunningBack is full-featured, it is slow. It maps the entire file system each time you use it, a task that may take thirty minutes or more. It's faster on restor-



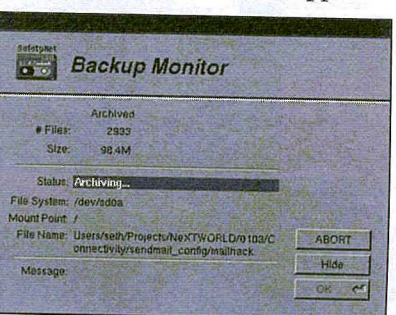
RunningBack's mouse-sensitive Help window guides you through a tape backup.

ing, retrieving files in a minute or two. While we were waiting, we found RunningBack was easy to understand, especially with the help of a cursor-sensitive help system.

Though slow, some buyers

may feel that RunningBack justifies the cost of the Microtech DAT drive. Others will opt for a less-expensive drive and make do with available software. Neuron says it intends to develop a newer, faster version, which would make it more attractive.

SafetyNet. Judging from the prerelease version we evaluated, Systemix Software's SafetyNet could become the premier NeXT backup solution. This new applica-



SafetyNet backups a 300MB hard drive in about 35 minutes.

tion makes backing up easy by customizable "backup profiles," documents that sweep preselected files or directories onto backup media (a command line version can go in /etc/crontab files) by simple double-clicking. More important, SafetyNet leaps beyond any other application, including UNIX tar or dump, by making it easy to back up and restore any file in one or two minutes - even from tape.

SafetyNet maintains a database of every file that has been backed up, storing an electronic index that allows the application to fast forward a tape to the exact location of an archived file. Although it takes time to build the index, you can do backups overnight. Files are usually restored in a panic, when every minute counts.

Unlike most other applications, SafetyNet deals intelligently with linked files, backing up a file once and restoring both the links and original files as needed. SafetyNet uses an enhanced version of tar that handles long filenames properly. In case disaster strikes, the application can build a bootable floppy that

allows you to rebuild your file system with nothing more than the SafetyNet floppy.

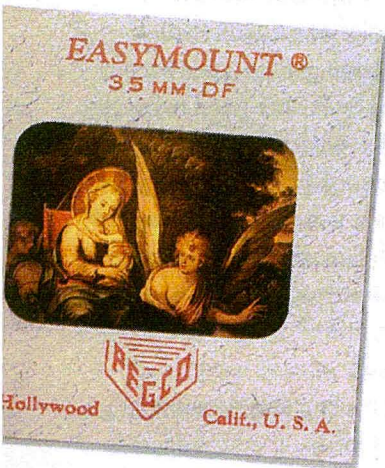
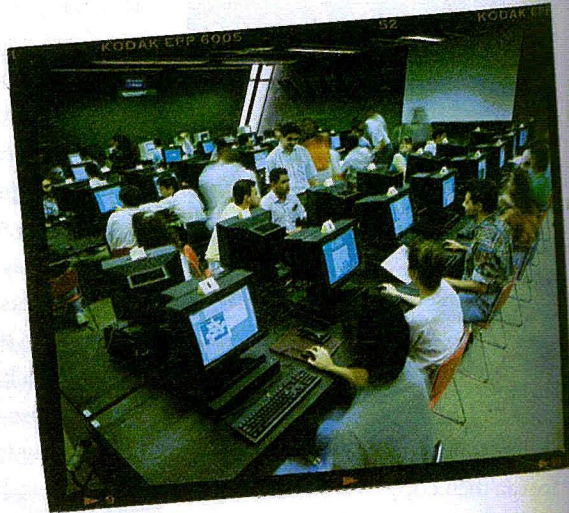
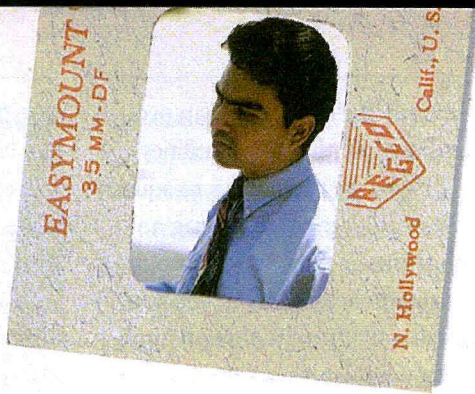
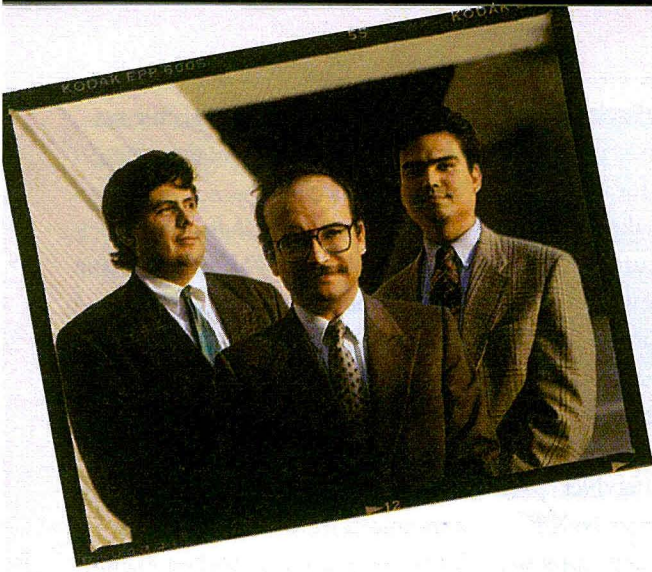
Any one of these features would make SafetyNet a must-have application for backup; the combination seems too good to be true for the single-user price of \$99 (network licenses cost \$399). We evaluated an early version of the software that did not implement all announced features. If Systemix Software delivers SafetyNet as promised, it will be the premier tool for NeXT backups.

MIX AND MATCH

Your choice of software will depend in large part on your backup medium. EnTar is a good match for the DAT tape drives popular at NeXT sites. Squash and Backup-Master are good bets with floppies, although Squash's proprietary approach is worrisome. The advanced features of SafetyNet hold the promise of easy, automated, and fast backup and restoration across all media. If your budget is tight, use the UNIX command-line approach.

Whatever your method, though, don't shirk your responsibility. When it comes to backing up, just do it. ♦

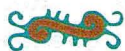
DANIEL KEHOE and SETH T. ROSS are contributing editors to NeXTWORLD. They can be reached at dkehoe@nextworld.com or sross@nextworld.com.



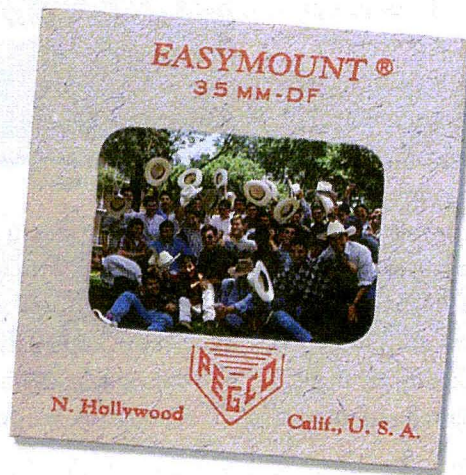
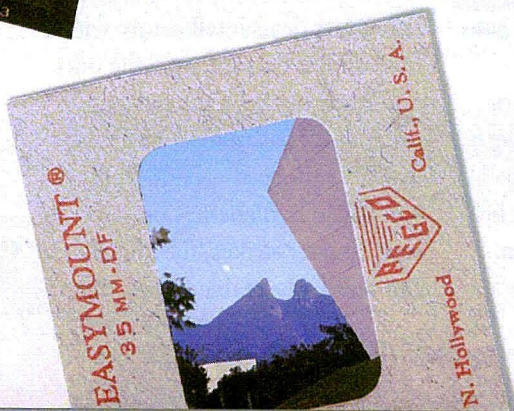
MEXICAN REVOLUTION: ITESM



BY JONATHAN LITTMAN



Mexico's pre-eminent engineering school, the Instituto Tecnológico y de Estudios Superiores de Monterrey, opted for NeXT in a big way. Its mission: change the way Mexico approaches computing.



A visitor to a mosaic of granite-fa are fresh came a ye explains a local guide. "H

Across the city from t generate more lasting char are stuck at odd angles int house Monterrey's Center modern centerpiece of Me Tecnológico y de Estudios here, ITESM.

Behind the stark exter for automated manufact heart is in the basement. T ers and minicomputers tha network, are dozens of Ne demic Computing. Their n Mexico - approaches com

Founded in 1943 by a ITESM's goal has been to t the best U.S. universities. I a Monterrey enrollment of puses around the country. leaders in business, enginee

ITESM prides itself on leac ogy, and the Institute's infl 30 percent of the top 100 (estimated 25 percent of all Today, a total of 170 NeX campus, with another 40 s Mexico.

David Trevino, techno Mexico's first user of both . 1980s, Trevino and the Ins Equipment Corporation dc a number of IBM minicom

Meanwhile, ITESM ke "When we knew that Steve track of what he was doing director. And in early 1989, lowing up the order the nex

The Institute wasn't re Flores was ruminating on a from vast PC labs to UNIX the more than 600 full-time her desk. Faculty, students, distributed systems with op puters. The dramatic shift v

PHOTOGRAPHS BY STUART WATSON



A visitor to Monterrey, Mexico, can't help but notice the mosaic of tin and cement shacks skirting the city's proud, granite-faced mountains. Many of the dilapidated homes are freshly painted an odd forest green. "The president came a year ago and thought the slums were ugly," explains a local guide. "He gave them free paint."

Across the city from the shantytown, computers are helping Mexico generate more lasting change. Two monolithic slabs of concrete and glass are stuck at odd angles into the earth as if plunged from the sky. They house Monterrey's Center for Advanced Production Technology, the ultra-modern centerpiece of Mexico's premier technical university, the Instituto Tecnológico y de Estudios Superiores de Monterrey, or as it is called here, ITESM.

Behind the stark exterior are hundreds of computers arrayed in labs for automated manufacturing and advanced engineering. But the building's heart is in the basement. There, next to the traditional mainframe computers and minicomputers that power the Institute's vast fiber-optic token-ring network, are dozens of NeXTs and a tightly knit group of users called Academic Computing. Their mission: to change the way the Institute – and Mexico – approaches computing.

Founded in 1943 by a Mexican businessman who studied at MIT, ITESM's goal has been to train professionals at standards equal to those of the best U.S. universities. Today, the private, U.S.-accredited Institute boasts a Monterrey enrollment of 15,000, with another 30,000 studying at campuses around the country. ITESM's graduates have gone on to become leaders in business, engineering, applied sciences, and computer science.



PIONEERS

ITESM prides itself on leading Mexico in the introduction of new technology, and the Institute's influence on Mexican industry is clear – more than 30 percent of the top 100 CEOs of Mexico's largest companies, and an estimated 25 percent of all Mexican engineers, are ITESM graduates. Today, a total of 170 NeXT workstations are installed on the Monterrey campus, with another 40 scattered around satellite campuses elsewhere in Mexico.

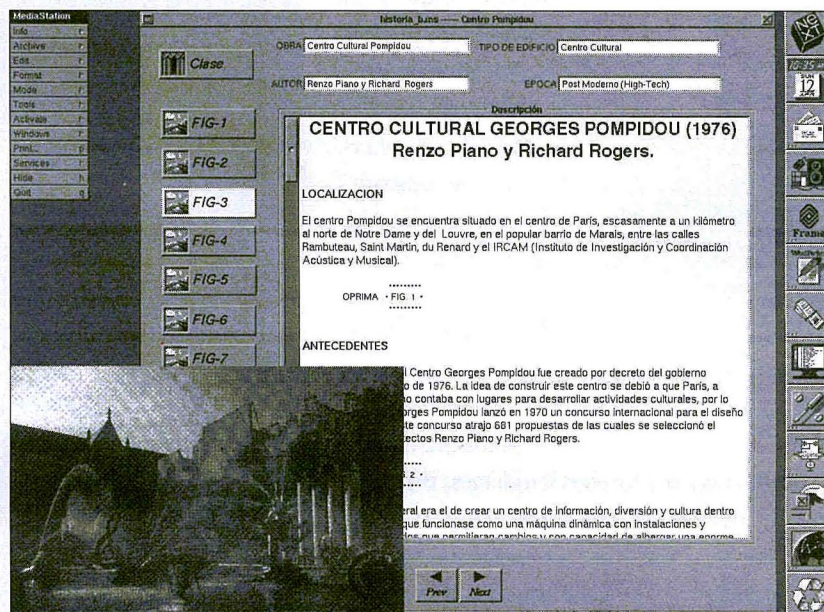
David Trevino, technology director of Academic Computing, was Mexico's first user of both Apple and Macintosh computers. In the late 1980s, Trevino and the Institute began looking at UNIX systems. Digital Equipment Corporation donated a VAX in 1988 and the Institute bought a number of IBM minicomputers.

Meanwhile, ITESM kept track of its favorite computer entrepreneur. "When we knew that Steve Jobs was founding a new company we kept track of what he was doing," says Ramiro Flores, ITESM's information director. And in early 1989, the Institute purchased ten NeXTcubes, following up the order the next year with five more.

The Institute wasn't ready to make a long-term commitment, however. Flores was ruminating on a far-reaching plan to shift ITESM's computing from vast PC labs to UNIX workstations running open systems. Each of the more than 600 full-time professors would have a workstation on his or her desk. Faculty, students, and satellite campuses would be connected by distributed systems with open-system servers and powerful parallel computers. The dramatic shift would cost over \$10 million.

Flores and Trevino were at the early stages of this ambitious plan. "We looked at the IBM RS/6000, HP systems, Apollo," says Trevino. "We found that they cost a lot, and they were not workstations we could put on every desk."

Then came the NeXT power breakfast. In July 1990, while in Dallas for a conference, Trevino had breakfast with Pliny Gale, NeXT's district sales manager for northeast Texas and Mexico. Trevino told Gale that he



ITESM architecture students research 18 major works using a MediaStation application.

had ordered 100 IBM PS/2s at roughly the same price as NeXTs. Gale dropped his fork.

"I said, 'David, sign this napkin, you're under nondisclosure,'" says Gale, who quickly filled Trevino in on the new machines – the 68040 NeXTstations that NeXT was readying for production – and invited him to tour NeXT's Fremont plant a few weeks later with Flores.

Flores's reaction was a salesman's fantasy. "He said, 'What's the upper limit we can buy?'" remembers Gale. To Flores, NeXT's university pricing and software bundling made the workstations seem too good to be true. "The least expensive [workstation] from Digital was \$25,000, compared with \$4000 for the NeXT," says Flores. "That was impressive to me."

ITESM responded by promptly signing a contract worth half a million dollars that has since been upped to a million dollars.

And that order for 100 IBM PS/2s? "In the end we only bought a few PCs," says Trevino.

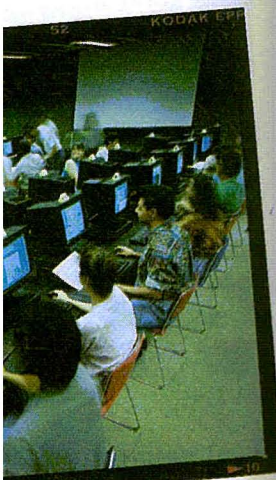


INDEPENDENTS

"We don't want to use packages, we want to develop them," says Ciro Velasquez, coordinator for Academic Computing, who argues that nondiscounted Mexican prices for U.S. software are one of several good reasons for ITESM to be self-reliant. "We must develop our own software."

Indeed, methodology may be what separates ITESM from other universities, including the best north of the border. The Institute has a carefully thought-out plan to use NeXTs that balances central-application design and the seeding of departments with showcase applications.

For example, Information Services has created a general-purpose test-





ing engine that uses the NeXT as a client front end, networked to an IBM RS/6000 server. Templates of math exams have been set up on the NeXT using FrameMaker and Mathematica, with problems categorized by difficulty and category.

Drawing from thousands of problems already stored on the IBM server, professors will soon be able to sit at a NeXT and generate new, custom examinations in a few minutes. Multiple-choice exams will be graded by scanners. Similar plans are under-

way for foreign languages, the sciences, engineering, and other disciplines.

The Institute's most dramatic use of the NeXT may be the 26-campus satellite network. Technology-crammed control rooms on the Monterrey and Mexico City campuses beam courses by satellite to the other campuses. This Sistema de Interaccion Remota enables students at the remote locations to send questions or comments via PC, dumb terminal, or a toll-free telephone number.

Only two years ago, texts and other necessary course materials arrived by mail – but often late. In Mexico, even the \$30-and-up express mail packages arrive mañana.

Now, each moderator at each distant campus receives class work via NeXTmail, a program Academic Computing finds so useful that it routes mail to the NeXT from many of its other workstations and computers. NeXTs are currently being tested as replacements for the on-line PC gateways at all 26 campuses.

Academic Computing has also seeded the use of NeXT by developing a showcase architecture application called Historia de la Arquitectura. Eighteen famous works of architecture, ranging from the Palazzo Ricardi in Florence to Frank Lloyd Wright's *Falling Water* house, are featured in a MediaStation presentation jointly created with the architecture department.

Architecture history students see color pictures and CAD-drawn plans of the buildings, study a time line, hear contemporary music, and listen to explanations about points of architectural interest while a pointer high-

NEXT SOUTH OF THE BORDER

NeXT is the second or third largest selling workstation in Mexico, a potentially lucrative foreign market. "I'm spending a lot of time in Mexico because I see a lot of opportunity," says NeXT's Pliny Gale. "My guess is we've got a 20 percent share of workstations in Mexico."

Mexico's 1200 workstations may seem a pittance, but sales to Mexico often precede sales to the rest of Latin America, a trend that may increase if the U.S.-Mexican free trade agreement falls into place.

And ITESM isn't the only one buying. *Novedades Editores*, a major newspaper in Mexico City, uses 26 NeXTstations for page layout, advertising composition, and color processing of photos. There have also been small sales to three public universities in Mexico City, a market all by itself with more than 300,000 students.

This summer, NeXT plans to bring on valued added dealers and resellers in Mexico City, Monterrey, and Guadalajara. Target lists of companies have been developed in financial services, publishing, and higher education. Pemex, the national oil company, is also a large potential customer.

Gale thinks education will be essential for demonstrating that the NeXT's ease of custom development offers the possibility of software made in Mexico. "To be successful I think we'll need to hold courses like the developer's class in Mexico so they don't have to go to the United States," he says.

Though ITESM does not promote specific machines, the prestigious university is laying the groundwork for NeXT by advocating open systems – sometimes with difficulty. "We have been struggling with vendors," says ITESM's Flores, who also heads Monterrey's most prestigious association of computer professionals. "They are still with proprietary systems."

Flores feels sure, though, that "open systems will catch up here." And if the past is any proof, Mexican industry may not be far behind.

lights building sections. Each work has an average of nine images scanned in with a scanner from HSD Microcomputer U.S.

Students can also work on a tutorial or focus on particular building elements, using a 150MB multimedia application that has increased student interest in history and won admiration for its integration of images, text, and voice. Architecture professors and students, who wrote all of the original text, selected the images, and drew all of the CAD plans, hope eventually to feature 100 architectural masterpieces. The application has been entered in an Educom software contest.

ITESM's marketing department plans to set up a similar showcase for Mexican ads and a system for students to create their own advertisements. At this writing, the department also hopes to install NeXTs running SAS, the powerful statistical program, in the Institute's library.

Meanwhile, the Advanced Computing lab at the Technology Center is on the verge of duplicating its success. The lab, which features 40 NeXTs connected to four NeXT servers through a token-ring network, has been so popular with students that the math department has recently begun clamoring for one of its own.



DOMESTIC CONTENT

ITESM has come a long way when you consider that the big concern over its first NeXT purchase was whether the black machine might eventually go Red. "NeXTs weren't easily exported to Mexico," says Flores. "We have relations with Cuba and [U.S. government officials] were worried the machines might end up in Moscow."

Today, NeXTs not only breeze through customs; they also arrive speaking the language. NeXT's operating system includes the capability of switching between languages and accessing translated user documentation.

And much of the expertise to repair NeXTs is now on the Mexican side of the border. Aurelio Sanchez, another of the Academic Computing faithful, attended a California NeXT technical-support course and became a certified NeXT technician. "It's really much easier to service than any other machine," says Sanchez, who routinely swaps out disks and makes minor adjustments.

Occasional problems have been resolved

quickly. "I send e-mail : response in a few days, contrast to the procedu major workstation venci very good relationship, get better service from here!"

But ITESM would standard applications b commitment to NeXT. a strong CAD program: what I would like is a lo Flores. "It has been a sl are doing something, po is a good sign."

With more than 700 rey campus, ITESM is a STEP '486, as well as fo token-ring cards, and ot technology.

Trevino thinks NeX peting for the desks of th ulty members. "In my pe workstation on the desk: says Trevino. "You can p instead of several and the be networked."

But professors and s decide this competition tl the rounds of the Institut demic Computing's Velas the same questions: "Hav arrived? When will the n Can we order more?"

Some professors can' of NeXT. Isabella Carmo is huddled with a student NeXTs in her cramped of



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has installed 320 mach become a major center **NeXTWORLD**, Fall 1
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quickly. “I send e-mail and usually get a
response in a few days,” says Sanchez, in sharp
contrast to the procedure with ITESM’s other
major workstation vendor. “While we have a
very good relationship with IBM, we think we
get better service from NeXT – and IBM is
here!”

But ITESM would like to see a few more
standard applications before it makes a larger
commitment to NeXT. First on the wish list is
a strong CAD program: “What I expect and
what I would like is a lot more software,” says
Flores. “It has been a slow process. Now they
are doing something, porting to the ’486. That
is a good sign.”

With more than 700 PCs at the Monter-
rey campus, ITESM is a beta site for NeXT-
STEP ’486, as well as for NeXTSTEP 3.0,
token-ring cards, and other NeXT networking
technology.

Trevino thinks NeXT has a shot at com-
peting for the desks of the Institute’s 600 fac-
ulty members. “In my personal opinion the
workstation on the desks must be a NeXT,”
says Trevino. “You can put one machine
instead of several and the NeXT is designed to
be networked.”

But professors and students will likely
decide this competition themselves. Making
the rounds of the Institute’s departments, Aca-
demic Computing’s Velasquez is hounded by
the same questions: “Have the new NeXTs
arrived? When will the next shipment come?
Can we order more?”

Some professors can’t seem to get enough
of NeXT. Isabella Carmona, a math professor,
is huddled with a student over a couple of
NeXTs in her cramped office. It is Monday



NEXT USER PROFILE

ORGANIZATION:

Instituto Tecnológico y de Estudios Superi-
ores de Monterrey (ITESM)

MISSION:

Mexico’s premier technical institution

HARDWARE:

210 NeXT systems at main and satellite
campuses

KEY SOFTWARE:

Mathematica, FrameMaker, MediaStation,
SAS, Improv, Create, WordPerfect,
TopDRAW, custom apps, public-domain
software

PURCHASE CYCLE:

NeXT took the bid away from a vendor
that already had a signed contract by
disclosing its new machines and improved
university pricing.

COSTS:

\$1 million. Approximately 85 percent is
hardware, 15 percent software.

IMMEDIATE GOAL:

Provide faculty with the ability to customize
lessons and exams and seed specific depart-
ments and student populations.

LONG-RANGE GOAL:

Empower each faculty member with a single,
networked scholar’s workstation and pro-
mote open systems throughout the general
student body.

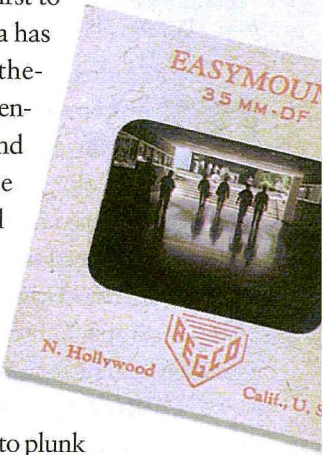


and she is preparing a test for Wednesday.
Carmona holds up a NeXT-generated exam.
“¡Que presentación!” she says, shooting off a
series of Spanish adjectives that sound like an
ad for a luxury car: “La rapidez, la armonía,
la concurrencia.” (“The speed, the harmony,
the integration.”)

One of ITESM’s first to
adopt NeXT, Carmona has
been smitten by Mathe-
matica. She uses it to gen-
erate exams, quizzes, and
homework. And the
author of several
respected Mexican
math books wasn’t
satisfied with just
having a NeXT in
her office. She is
ITESM’s first professor to plunk
down the over 12 million pesos necessary to
buy her own NeXT, an unheard of investment
on a Mexican professor’s salary.

She paid for the machine months ago, and
though her workstation has yet to arrive, her
enthusiasm is contagious. This dedicated *pro-
fessora* is only half joking about the sacrifices
she made when she laughs, “Cinco años sin
zapatos para comprar mi NeXT.”

To Isabella Carmona, five years without
shoes is a small price to pay for a NeXT. ♦



JONATHAN LITTMAN is an inves-
tigative writer and author whose work has
appeared in *Forbes*, *the Village Voice*, *the*
Los Angeles Times, and *the San Francisco*
Chronicle.



SBC/OC readies real-time Improv, updates suite of custom-trading apps

Since its decision in December 1990 to go with NeXT,
Swiss Bank Corporation/O’Connor Services (SBC/OC)
has installed 320 machines in its Chicago and London offices and
become a major center of software development (see “Bull Market,”
NeXTWORLD, Fall 1991).

The trading giant is currently finishing up a joint project with
Lotus to develop real-time Improv. “We’re very involved and we
know there are some other third-party people committed to seeing
it succeed,” says Vice-President Bill Martin. The finished program
would allow NeXT applications to easily access a variety of real-
time market data.

SBC/OC also helped spec and beta test Concurrence, the out-

liner and presentation software from Lighthouse Design. “We have
400 Macs. I had to convince the partners that NeXTs were better
Macs, and my Mac users told me they couldn’t do what they do for
the firm without things like MORE 3.0,” says Martin.

Traders have just been given Release 2.0 of SBC/OC’s custom
trading system, the heart of its mission-critical apps strategy. “The
app has been very successful in-house and we’ve started work on
Release 3.0 taking over more [financial] instruments than it handles
now,” Martin says. SBC/OC also plans to roll out two more trading
systems in the near future.

“People are really using the machines,” says Martin.

by ELIOT BERGSON

Desktop Color

NeXT advances the state of the art in personal color printers

by DAN LAVIN

When we wrote a preview of the NeXT Color Printer (NCP) based on its paper specs, we were ecstatic about the prospect of PostScript color output on the desktop at a breakthrough price (see "Color for Everyone," *NeXTWORLD*, Spring 1992). Now that we've been able to put the printer through the paces in our lab under beta NeXTSTEP 3.0, our enthusiasm is tempered only slightly by performance realities.

The NCP lives up to its billing for quality output, but we found the processing requirements of an attached NeXT system so great that the product does not fulfill the vision of a true personal color printer. While it represents a breakthrough in PostScript color printing, potential buyers need to recognize the limitations as well as outstanding benefits of the device.

Like the NeXT Laser Printer, the NCP is less expensive than equivalent devices on other platforms because the PostScript processing is done on board the NeXT machine that's connected to it. With the Laser Printer, that approach involves few trade-offs. It can sit on a network or individual desktop spitting out pages in the background with little effect on the performance of an attached NeXT computer.

Unfortunately, because of the size and complexity of color images, the same is not necessarily true for the NCP.

It is probably unreasonable to expect the NCP to perform as well as the NeXT Laser. As long as

buyers compare it with competitive color printers and not their hopes and dreams, most will agree that it is a great product.

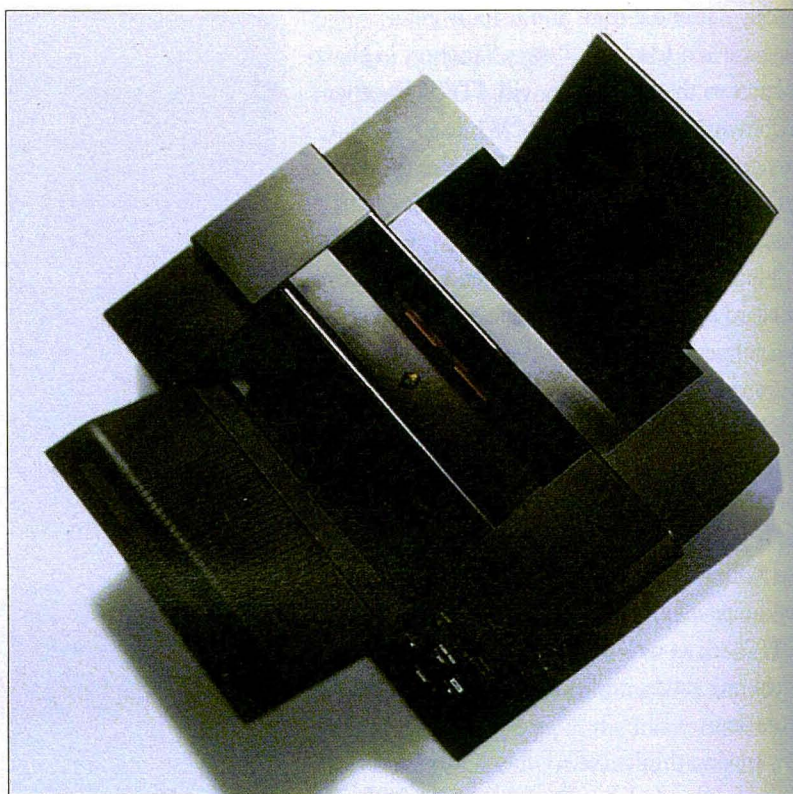
Basics

The NCP is built around the Canon Color BubbleJet printer engine. There are four print heads inside the NCP, one each for cyan, magenta, yellow, and black, the components of the CMYK color model. Each print head has 64 nozzles that deliver a single drop of ink to the page. An illusion of full color is produced by laying down the dots at 360 per inch under the control of PostScript Level 2 inside the NeXT machine itself.

The printer weighs in at 22 pounds and measures 20.5 inches wide by 16.6 inches deep by 6.7 inches high. Aesthetically, it resembles the other black toys with fins on your desk. It takes paper up to 11 by 17 inches or the A3 European standard. It connects to a NeXT computer via the SCSI port for data throughput of up to 4MB per second.

Priced at \$3495, the NCP is half the price, or less, of any comparable color printer. Thermal-wax alternatives range from \$6995 for the NEC ColorMate to \$9495 for the Seiko PSX-4. The only comparable plain-paper technology is the Tektronix Phaser III PXi, which costs \$9995.

The per-page costs are somewhat higher than we estimated earlier (about 24 cents per average page for the toner and 10 cents per sheet of the special paper you need for highest quality). Keep in mind,



The NeXT Color Printer provides quality output at a breakthrough price. Processing bit-mapped images may bog down the host machine, however.

though, that only the amount of toner needed is used on any given page. So if you want to print only a small yellow circle, for example, it may cost as little as a penny a sheet on plain paper.

Test drive

The printer is easy to set up. Loading materials was much easier than with thermal-wax printers, for example, which use inks delivered on sheets resembling plastic wrap. Ink for the NCP comes in plug-and-play cartridges. No maintenance or cleaning is necessary.

NeXT Color Printer



With careful management of user expectations, an excellent printer and an excellent value. Performance of the host machine is affected, so a dedicated print server may be necessary if the printer is shared or used to print a large number of bit-mapped images.

\$3495

\$20/200 sheets of letter-size paper

\$14/100 sheets of legal-size paper

\$50/50 transparencies

\$35 for each color cartridge

NeXT Computer, 900 Chesapeake Dr., Redwood City, CA 94063. 800/848-6398.

The primary machine we used for testing was a loaded NeXTstation Turbo Color with 32MB of memory and a 400MB hard disk, a heftier configuration than many users will have available. We tried it on less-loaded machines and found that performance was indeed slower but not dramatically so.

We used a random collection of color images for our test, including scans, line art, and drawings of varying complexity and color coverage. Figuring that people will also use it for ordinary tasks, we tried it with black-and-white text as well. We experimented with both the coated paper and the normal copier paper we use around the office.

Output

The printer handled everything we threw at it. The connection, even with a beta operating system, was solid. The printer never malfunctioned, never misprinted, never jammed. The output looked, for the most part, excellent.

Color reproduction is surprisingly good. The results are especially impressive with line art and

"soft" images that benefit of blending and dithering used to the "cartoony" effect of the RGB color model used in wax printers, you'll find results are more realistic and suitable. In PostScript Level 2 proofing, color correction, which yields a more accurate color, though the CMYK model always has trouble reproducing certain colors, like sky blue.

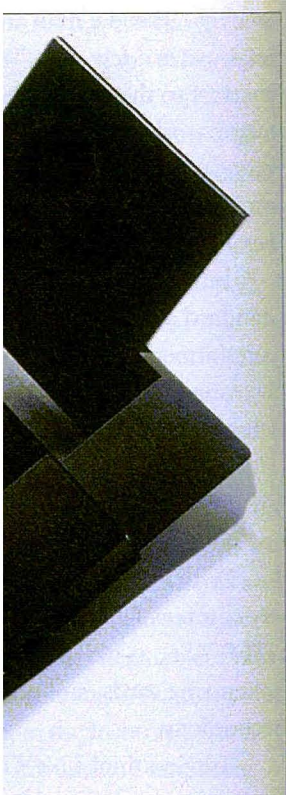
We complained in our review of a grainy texture in the output, especially when the printer prints light shades of color and certain halftones. This has been improved significantly, though not completely corrected.

Reproductions of photographs are often quite stunning, though not quite up to the standard of an expensive dye-sublimation printer and not even close to the quality of a Canon Color Laser Copier or a printing press. The quality of the output is excellent for present purposes, but not appropriate, however, for professional color proofing.

A good rule of thumb is that output should not be a step closer to some other goal. The NCP isn't suited for creating mechanicals or photographic masters for quantity reproduction. It's good for short runs of letter-quality originals, transparencies, and things that are in themselves a final product.

The results are superior in many cases when using the special coated paper instead of plain paper. Printing with a lot of blending and fine detail on plain stock, but professional art tended to blur. The color is always better on the coated paper. In most cases, the 10-cents-per-sheet cost of the special paper is a big deal. It might be a problem, however, when you want to print 500 copies of an intricate line drawing onto Ivory Laid bond paper, for example. The coated paper comes in only a few varieties, and we were also annoyed at having

REVIEWS



High price. Processing bit-mapped

primary machine we used was a loaded NeXTstation Color with 32MB of RAM and a 400MB hard disk, more configuration than many machines have available. We tried it on other machines and found performance was indeed not dramatically so. We used a random collection of images for our test, including line art, and drawings of complexity and color covering everything that people will also do in ordinary tasks, we tried it with black-and-white text as well. We experimented with both the NeXT printer and the normal copier use around the office.

It handled everything we threw at it. The connection, even on the NeXT operating system, was solid. The printer never malfunctioned, never jammed, never misprinted, never faded. The output looked, for the most part, excellent. The reproduction is surprisingly good. The results are especially impressive with line art and

“soft” images that benefit from lots of blending and dithering. If you’re used to the “cartoony” effect of the RGB color model used in thermal-wax printers, you’ll find that colors are more realistic and subtle. Built-in PostScript Level 2 provides color correction, which yields accurate, vivid colors, though the CMYK model always has trouble reproducing certain colors, like sky blue.

We complained in our preview of a grainy texture in the printing, especially when the printer tried to print light shades of colors and certain halftones. This has been improved significantly, though not completely corrected.

Reproductions of photographs are often quite stunning, though not quite up to the standard of very expensive dye-sublimation printers, and not even close to the quality of a Canon Color Laser Copier or a printing press. The quality of output is excellent for presentations, color comps, and reports. It is not appropriate, however, for high-end color proofing.

A good rule of thumb is that output should not be a stepping stone to some other goal. The NCP isn’t suited for creating color mechanicals or photographic masters for quantity reproductions. It’s good for short runs of letterhead originals, transparencies, and other things that are in themselves the final product.

The results are superior in most cases when using the special coated paper instead of plain paper. Anything with a lot of blending looked fine on plain stock, but precise line art tended to blur. The colors were always better on the coated paper. In most cases, the 10-cents-per-sheet cost of the special paper is not a big deal. It might be a problem, however, when you want to run off 500 copies of an intricate line-art logo onto Ivory Laid bond paper, for example. The coated paper comes in only a few varieties. We were also annoyed at having to

specify plain paper in the Print panel every time we wanted to output to noncoated stock.

Performance

Print times were reasonably good – about two minutes for an average image. Unfortunately, the NeXT machine itself ground to a virtual halt when processing color images. For all practical purposes, we were unable to do anything else with the machine while the image was printing. This is mildly annoying with small images but highly frustrating with big ones.

Why does this happen? PostScript files are composed of three sets of commands: to generate text, generate graphic elements like lines and circles, and process bit-mapped images like scans and TIFF files. The CPU steps through PostScript commands one by one, letting other programs do their work in between. That’s no problem if most of what you do involves text and graphic elements. Drawing a line, for example, is a discrete step that takes little time. Unfortunately, to some approximation, processing a bit-mapped image is also one instruction. With the additional processing drain caused by PostScript’s color correction, you’ll find yourself going for a coffee break every time you print a TIFF.

The net result is that the printer needs a NeXT machine as a dedicated print server if it is used a lot for bit-mapped images. That makes the \$3500 printer an \$8500 printer – still a better deal than thermal-wax printers but not the breakthrough personal printer we’d hoped for. Also, if you publish your personal NCP to the network – an easy task – you’re throwing yourself on the mercy of your officemates.

Our recommendation: If you plan to use the NCP mainly for line art and presentations and just the occasional bit-map, you can connect it to any machine on the network. If you will use it for large

numbers of images, don’t share it on the network unless it’s connected to a dedicated print server.

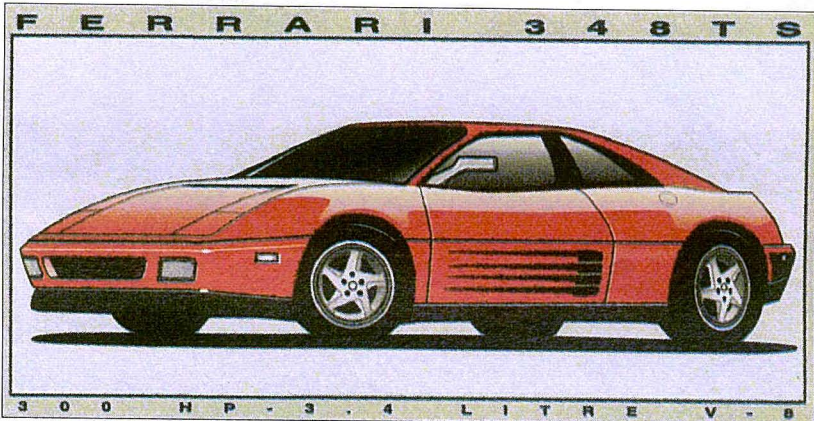
Conclusion

Despite our performance concerns, the NCP is a great printer at a great price. We had hoped that the NCP would be the color printer for the everyman – that it would prove to be a color version of the popular NeXT Laser Printer. Unfortunately, printer technology is not yet at that point. Performance limitations and the cost of materials conspire against this ideal.

Considering the NCP in the real world and comparing it with other color printers that are complicated to own and operate, the NCP wins hands down – it’s half the cost, faster, and has better output. Further, it’s environmentally sound, wanting little toner and containing its own waste.

The NCP is highly recommended. Just remember to manage your expectations. ♦

DAN LAVIN is a senior editor at NeXTWORLD. He can be reached at dlavin@nextworld.com.



The fine line art on the car shows the limitations of using plain paper. The NCP produces its best output with multicolored images in which blending helps create a photographic illusion.



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“If I stab myself in the head with this pencil, will it hurt?”

Yes, it will.

Some things are obvious before you try them. Like PasteUp™, our brand new page layout application.

We've designed PasteUp from scratch, taking full advantage of Display PostScript and your wonderful NeXT™ computer. We've also made major advances in user interface, power, and flexibility.

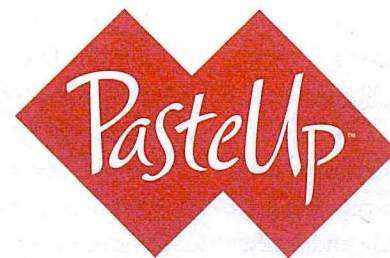
PasteUp has tons of innovative features including: collapsible page ranges, unlimited multiple undos, drag-and-

drop styles, automatic drop shadows for text and shapes, smart quotes (even when you paste in new text), a thumbnail navigator, full rotation and shearing of text, and hyphenation in 12 languages.

The best part is that PasteUp looks like a cross between a word processor and a drawing package, and you'll be able to figure it out in three minutes. But you'll want to read the manual anyway, because it's beautifully written, and because there's a lot of sophistication lurking just below the Alternate key.

Everyone has been waiting for a great page layout program for the NeXT, and we're looking forward to the opportunity to exceed your wildest expectations.

PasteUp is shipping now. Call us at RightBrain Software™ (800-472-7246) or call your local dealer for a demonstration.



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Luck of the Draw

Appsoft Draw puts drawing tools in the hands of mere mortals

by TONY BOVE and CHERYL RHODES

There is no better drawing experience on a computer than the one you can have with a good drawing or illustration program on a NeXT machine. The combination of Display PostScript, fast throughput, and real multitasking in the NeXTSTEP operating environment provides fertile ground for creative inspiration. Why? Because as you modify objects on the screen, the computer redraws them quickly and exactly, without the system or drawing tools getting in the way of the creative process.

Until recently, you could get this experience only by using a professional illustration program such as Adobe Illustrator. But why should only pro illustrators have this much fun? Everybody needs to draw, from marketing reps working on presentations to engineers working on prototypes. What these people need is an easy-to-learn drawing package that can produce multipage documents and offers automatic functions for the nonartist.

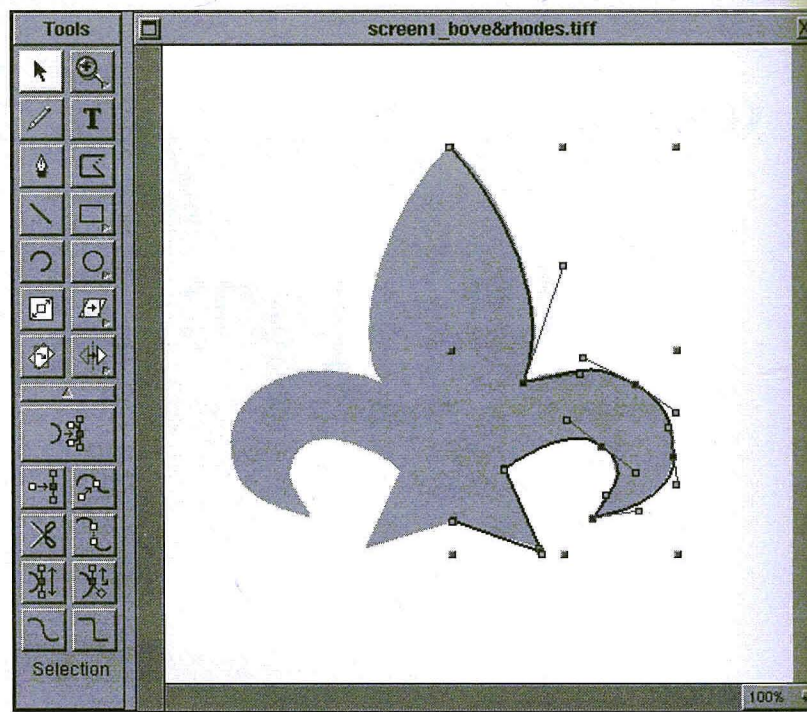
Appsoft Draw goes beyond these basic requirements by providing tools that professional illustrators would find useful. At \$395, Draw is attractive to professional illustrators as a second drawing package for quick illustrations, but its biggest market is for NeXT users with limited drawing skills who need to produce professional-looking graphics quickly and easily.

Draw features multipage-document capabilities, easy selection

tools, simple brightness and contrast controls for TIFF images, a page browser, and a matrix option for quickly designing row-and-column tables and illustrations, setting it apart from other programs currently available on the platform. In addition, it offers a Bezier-curve tool, 25 levels of undo, the capability to mask a TIFF image into an EPS object, tools for skewing, rotating, and scaling objects, overprinting, and text-wrapping within an object's boundaries. You can easily incorporate a Draw image into an Illustrator document or vice versa, thanks to the wonder of EPS, allowing you to use the best features of each program.

TopDraw reborn

Appsoft Draw did not suddenly emerge from the woodwork. Versions of the program, originally called TopDraw from Media Logic, have long been used to demonstrate the NeXT machine's capabilities as a drawing and illustration platform. But Appsoft Draw is light years better than anything TopDraw ever had to offer. Draw now conforms to all of the NeXTSTEP standards for tools, panels, and menus. Although it lacks automatic data charting and graphing functions (the only important omission), it makes up for this shortcoming by providing excellent text-handling and object-manipulation features. For those who absolutely must have charts and graphs, you can generate them in a spreadsheet and



Appsoft Draw provides a Freehand drawing tool and a variety of different Bezier-point selection and modification tools.

then bring them into Draw for sophisticated-looking presentation materials.

Appsoft Draw provides a Freehand tool for drawing objects from scratch or for tracing locked objects (a locked object can't be moved or otherwise changed until you unlock it). The Freehand tool creates an object with a path that has control points to manipulate and change the shape of its path. You can also adjust line smoothing (the degree by which the program will attempt to smooth a hand-drawn path). The higher the degree of smoothing, the less bumpy the path (and fewer control points generated).

We found one small bug in the Freehand Tool Settings panel: Even though we set the default path-

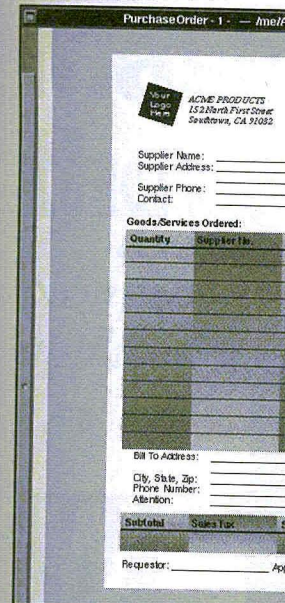
smoothing tolerance to exactly 10, every time we subsequently opened this panel the default tolerance was set to 9. When we finally set the tolerance to 10.65, the default tolerance was properly set to 10 when we opened the panel again.

The path-editing tools are similar in some respects to Adobe Illustrator's, but Appsoft has added Loosen Path and Tighten Path options for proportionately increasing or reducing the length of all direction lines in the path. With this simple adjustment, you can make curves tighter or looser, which is the kind of feature that best characterizes Appsoft Draw as a drawing program for the casual as well as the professional user.

Unique features

One of the best features of Appsoft Draw is the Matrix command, which you can use to create copies of an object at specific locations. Matrix is useful for creating multiple copies of shapes or lines of a form or bar chart.

Another excellent feature is the Grid tool. You can specify grids of any size, using various colors and positions. You can indicate whether



Use the Matrix panel to create rows and/or columns. In this example, the panel is set to create rows.

you want Draw to snap a motion to the grid for aligning objects. You can make the grid invisible or have it positioned in front of, or behind, graphic objects.

Appsoft Draw makes importing text that is saved as a file by a word processor. It maintains the formatting and lets you wrap text line by line inside a text object. Draw offers manual automatic letterspacing of characters as well as complete control over font sizes, styles, character fill, line patterns, and colors. The program also lets you set text along a path so its orientation conforms to the path.

Draw's handling of TIFF images is superb for a general-purpose drawing program. We expected it to drag-and-drop a TIFF image, and perhaps the ability to import a TIFF image, but Draw also lets you change the image's container to a Bezier object so that you can edit the curves and obtain a 3-D effect. Furthermore, you can mask a TIFF with any PostScript image that appears only inside the TIFF image.

Draw will perform color separations necessary for some printing. It can also print separate spot-color layers, with over-

Draw

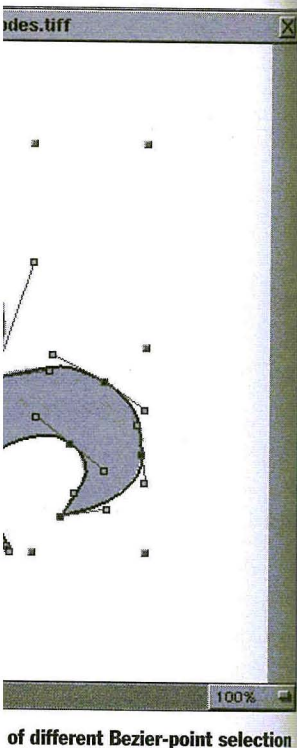


Ideal as a basic drawing tool for both general users and professional illustrators, Draw offers unique features that make it well worth the money. Better tutorial files and documentation might provide perfection.

\$395

Appsoft, 255 Shoreline Dr. #520,
Redwood City, CA 94065. 415/802-2900.

R E V I E W S

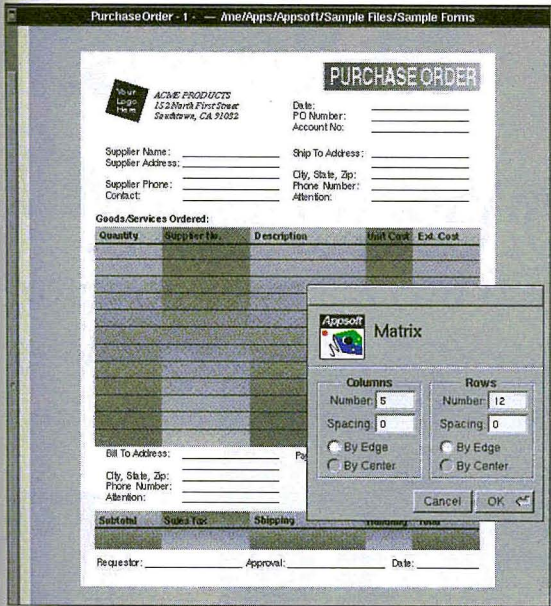


of different Bezier-point selection

ig tolerance to exactly 10, ie we subsequently opened l the default tolerance was When we finally set the to 10.65, the default tol- as properly set to 10 when d the panel again. path-editing tools are simi- re respects to Adobe Illus- out Appsoft has added ath and Tighten Path op- proportionately increasing ng the length of all direc- in the path. With this sim- ment, you can make hter or looser, which is the ature that best character- oft Draw as a drawing for the casual as well as sional user.

features

e best features of Appsoft e Matrix command, 1 can use to create copies ct at specific locations. useful for creating multi- of shapes or lines of a ar chart. er excellent feature is the You can specify grids of ising various colors and You can indicate whether



Use the Matrix panel to create an array of repeated objects in rows and/or columns. In this example, an array of lines are created as rows in the Matrix panel.

you want Draw to snap any mouse motion to the grid for aligning and arranging objects. You can make the grid invisible or have it show its position in front of, or behind, the graphic objects.

Appsoft Draw makes it easy to import text that is saved as an RTF file by a word processor. Draw retains the formatting and lets you wrap text line by line inside any object. Draw offers manual and automatic letterspacing of characters, as well as complete control over font sizes, styles, character fill, line patterns, and colors. The program can set text along a path so its baseline conforms to the path.

Draw's handling of TIFF images is superb for a general drawing program. We expected the ability to drag-and-drop a TIFF image, and perhaps the ability to rotate a TIFF image, but Draw also lets you change the image's container to a Bezier object so that you can distort the curves and obtain a 3-D effect. Furthermore, you can mask the TIFF with any PostScript image so the TIFF appears only inside the other image.

Draw will perform color separations necessary for some kinds of printing. It can also print separate spot-color layers, with overprinting

produce an entire newsletter. With a document as text-intensive as the newsletter file provided as a sample, however, Draw takes a long time to scroll the window to show more of the page. The program was optimized for handling graphic objects, not for text-intensive page layout, and lacks a facility for extending text flow from one page or block of text to another.

Limitations

Don't compare Appsoft Draw to an illustration program such as Adobe Illustrator, which has many more features for sophisticated illustration (such as data-driven graphics and text flow from one object to another). But while Draw may not do everything Illustrator does, it handles the job of drawing objects cleanly and simply. This is bound to make Draw popular among the majority of NeXT owners, even if they also use more-sophisticated illustration programs.

The package is complete, and the sample files are useful, but the quality of the sample and tutorial files is not as high as we would like. For example, the sample files used the wrong fonts; as a result, the text overstepped its boundaries. The manual should better

of one or more objects' fills and borders. Furthermore, you can control the chokes and spreads of overprinting for precise color control.

With its multi-page facilities – the Page Browser, text-layout features, text-file and TIFF-image file importing, TIFF-image brightness and contrast controls, and text- and image-resizing capabilities – Draw could be used to

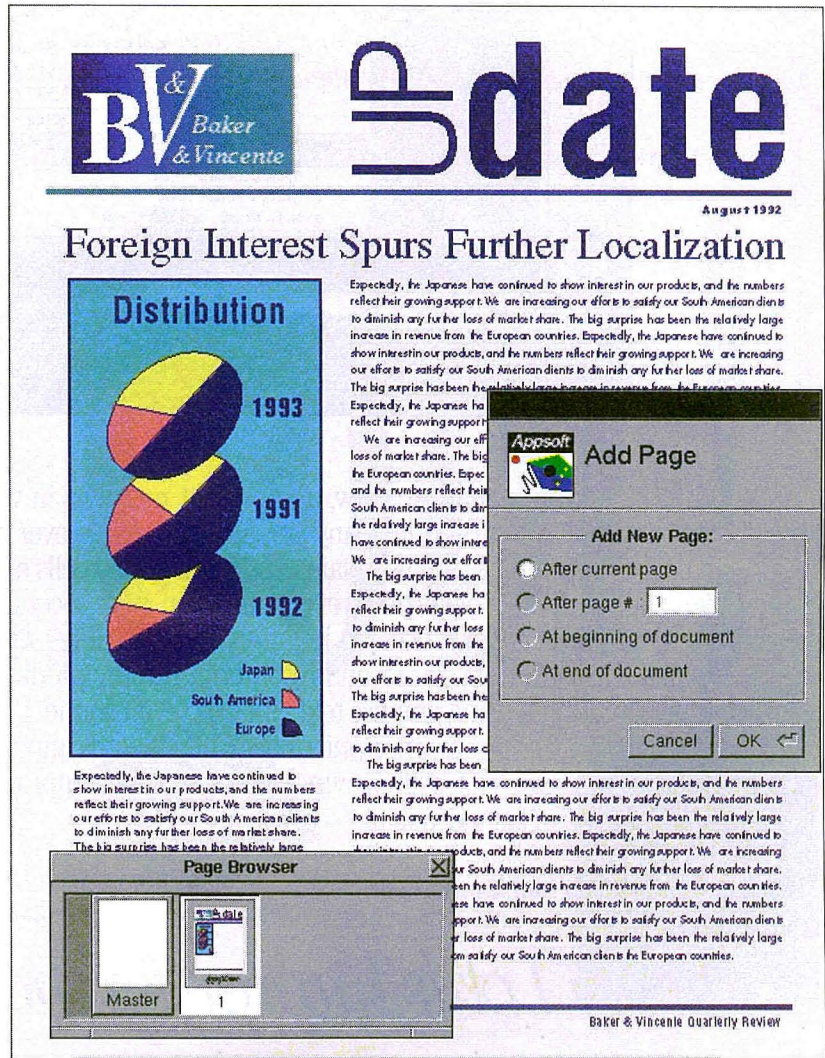
describe how to use the Freehand drawing tool by showing an icon of the tool in the manual (so that you know at a glance which tool to select). The path-manipulation tools are a bit hard to understand at first and are presented too early in the manual's tutorial – before the user has a chance to master the easier tools. The tutorial section also neglects to mention how to make the direction points visible, and does not say why you need to use the Alternate key when selecting points for deletion. The tutorial uses the terms "anchor point" and "control point" liberally but does not define them.

These criticisms may be only minor quibbles, but beginners and nonartists need better hand-holding. In general, the documentation is thorough, but the tutorial section should be more understandable for people who are not accustomed to

editing paths with a program such as Illustrator.

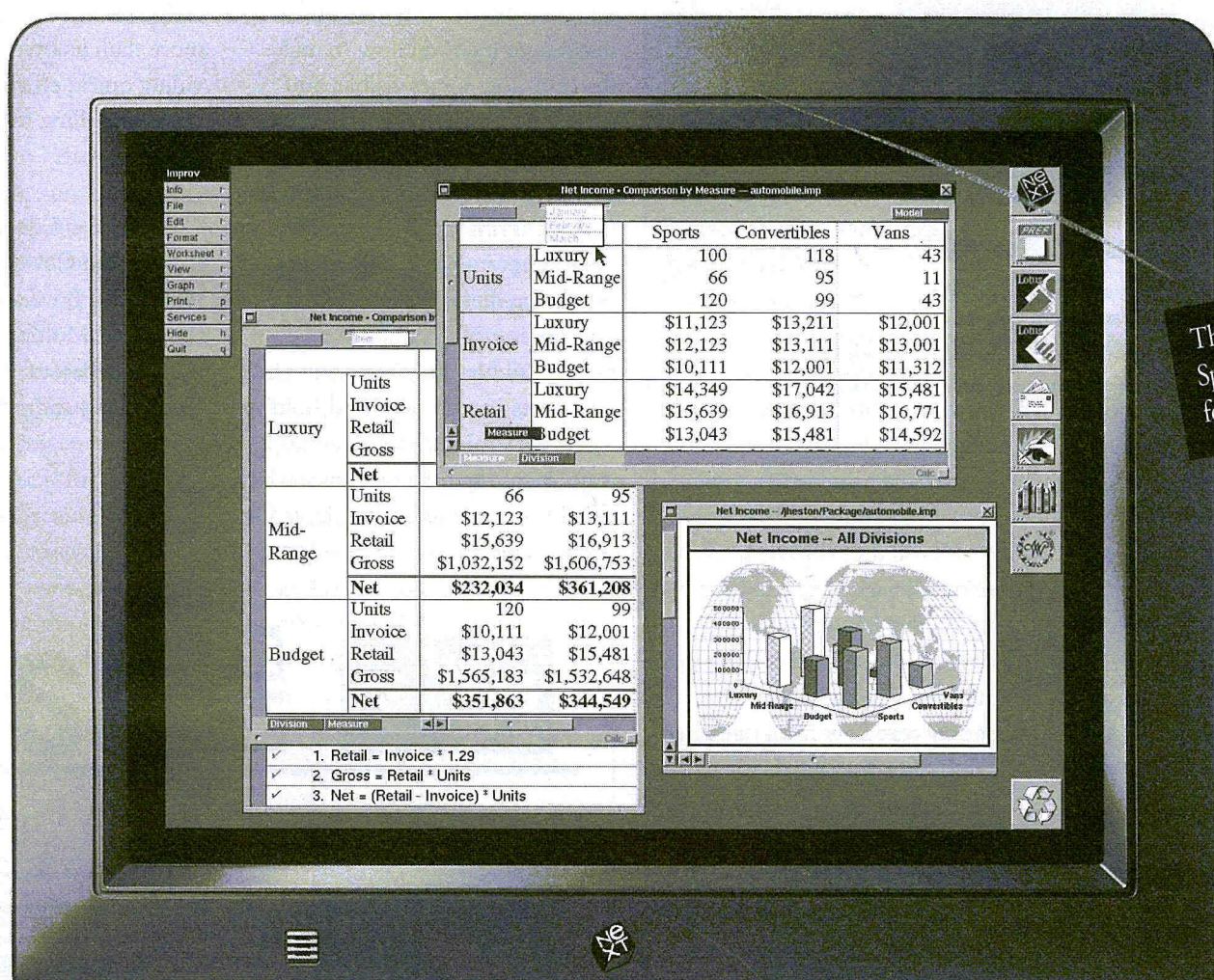
Still, Appsoft Draw brings out the best of the NeXT machine's graphics, text-layout, and image-handling capabilities and takes full advantage of the friendly interface of menus, tools, and panels. It may not be able to carry the weight of all illustration tasks, but it carries more than its own weight in providing quick, efficient drawing and image-handling functions.

Contributing Editors TONY BOVE and CHERYL RHODES publish the Bove and Rhodes Inside Report on Multimedia and Publishing Technologies. They can be reached at t-and-c@toad.com.



Draw's multipage text- and image-layout capabilities permit complex page designs.

Lotus Improv. The NeXT™ generation in spreadsheets.



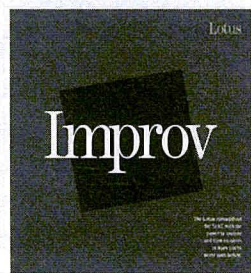
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With the power to analyze, view, and present numbers in vastly new and exciting ways, Lotus® Improv™ is clearly unlike any spreadsheet you've ever seen before.

To begin, Improv lets you use plain English to define cells and create formulas. Then Improv gives you the ability to rearrange everything—in mere seconds instead of hours. Which means your spreadsheet models become infinitely more flexible—and insightful.

Finally, with stunning clarity and resolution, Improv produces the most compelling charts and presentations, using graphs, text, images, even sound.

For more information about Lotus Improv, call **1-800-343-5414**. One look will convince you that Lotus Improv is the NeXT generation of spreadsheets.



Lotus Improv for the NeXT Computer.

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Master the C

Nonprogram
applications

by BEN CALIC

While it's true that NeXTST is a marvelous environment

it's a fantasy to think that the average NeXT user is going to build out beautiful custom applications without programming experience. Users without programming experience must have even more accessible tools for building information-based training programs and presentations. Now, International offers to fill this gap with its "multipurpose nonprogramming tool," CraftMan.

CraftMan is roughly comparable to HyperCard on the Macintosh, the granddaddy of nonprogramming tools. HyperCard, which lets end users construct and navigate "stacks" of information, has long been heralded by Apple as an object-oriented development environment. With CraftMan, the NeXT community gets an authoring tool combining the power of

"...Improv knocked me out. It's the first new program that I've seen in months. Lotus's designs are truly innovative."

—BYTE Magazine, 10/90

"A stunningly simple approach to organizing complex data."

—PC World, 11/90

"Improv is one of the most interesting applications I've seen in quite some time. It's a totally different take on the spreadsheet."

—Info World, 11/1/90

CraftMan

beta

Solid authoring system, roughable to Macintosh HyperCard brings programming tools into the hands of mere mortals. As a mini-Builder, it offers great function prototyping capabilities but no improve on returning objects while scripting, object-class design and graphics handling.

\$1500 single user

\$295 educational user

Xanthus International AB, Kungälvägen 14, S-113 57 Stockholm, Sweden
46/8/612.89.95, 46/8/612.89.96

leets.

The #1 Spreadsheet for NeXT

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out. It's the first new in months. Lotus's vative." —BYTE Magazine, 10/90
pproach to organizing —PC World, 11/90
ost interesting applica- some time. It's a totally readsheet." —Info World, 11/1/90

REVIEWS

Master of the Craft

Nonprogrammers can build NeXT applications with Xanthus CraftMan

by BEN CALICA

While it's true that NeXTSTEP is a marvelous development environment, it's a fantasy to think that the average NeXT user is going to crank out beautiful custom apps in Objective-C. Users without programming experience must have even more accessible tools for building information-based training programs and presentations. Now, Xanthus International offers to fill that gap with its "multipurpose multimedia programming tool," CraftMan.

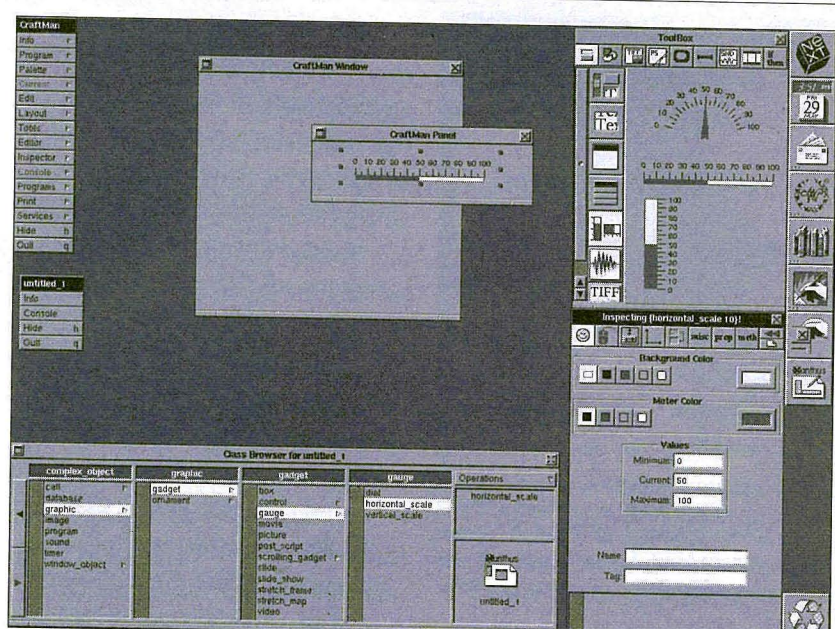
CraftMan is roughly comparable to HyperCard on the Macintosh, the granddaddy of personal programming tools. HyperCard, which lets end users construct easy-to-navigate "stacks" of related information, has long been mislabeled by Apple as an object-oriented development environment. With CraftMan, the NeXT community gets an authoring system combining the power of true object-

oriented programming and the accessibility of HyperCard. A beta version was used for this review.

The program is aimed at users who need to create information-based applications containing animation, sound, graphics, and video. It is also useful for creating prototypes and interfaces to other programs. (As CraftMan allows access to UNIX commands, it would be a perfect tool for putting friendly interfaces on that huge library of great UNIX utilities.)

CraftMan could be described as Interface Builder for the rest of us. Like IB, it provides a palette of interface elements: menus, windows, buttons, and sliders that can be arranged any way you like. It also offers a rich scripting language, CraftScript, which permits programming of more complex functions. Once your project is done, you can use CraftMan's run-time module, which lets the prototype emulate a finished NeXT application, complete with custom icon.

Each of the CraftMan objects is preprogrammed with both a certain look and built-in functionality. The objects are divided into classes, each of which has methods and properties associated with it. Methods are the actions that an object is capable of performing. For example, a slide-show object would have a method to move to the next slide in the series and wait for the message `next_slide` to invoke that method. The properties refer to the characteristics of a given object, such as



CraftMan allows users to create multimedia applications that include high-quality graphics, sound, animation, and video.

its size, location, or title. CraftMan supports all the major standard interface elements used by NeXT programs.

Instead of HyperCard-style stacks, CraftMan allows you to create flexible interfaces that closely resemble other NeXT programs. You define the look of your pro-

gram by dragging items from a customizable palette of tools. You then wire up the objects to perform specific actions by dragging a connection between the object and any target on the screen. After the connection is made, the target object presents a list of all the messages that your original object can send

CraftMan
beta
Solid authoring system, roughly comparable to Macintosh HyperCard, that brings programming tools into the hands of mere mortals. As a mini-Interface Builder, it offers great functionality and prototyping capabilities but needs to improve on returning objects' names while scripting, object-class distinctions, and graphics handling.
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Circle 47 on reader service card

and that the target understands. It's a wonderful, clean way of understanding the relationship between objects.

One advantage of CraftMan's object orientation is that you can create your own subclasses of objects. If you decide you want the buttons in your project all to share certain additional abilities, simply define a button with those features as a new subclass to be reused whenever you need.

When a more complicated script is required, CraftScript allows messages to be sent to as many other objects as needed. For example, if you want a single button to move one slide show forward and a second slide show in the opposite direction, you might write the following CraftScript script:

```
{slideshow slideshowone}:next_slide
```

```
{slideshow slideshowtwo}:previous_slide
```

While I'm no expert in Objective-C, I found CraftScript to be approachable and easy to use. My one complaint is the constant need to refer to the names of the objects you are working with while scripting. To deal with this, you can either write down all the names of the objects before you start a particular script or quit the script in the middle, inspect the target object to find out its name, and then reopen the script you were working on, a cumbersome process likely to lead to errors in the code. The program should provide a more direct way of returning an object's name. Perhaps holding down certain keys and clicking on an object could put its name in the script or on the pasteboard.

Though impressive, CraftMan shows room for improvement in other areas as well. The program allows you to import bit-mapped graphics, but it doesn't provide any way to edit those graphics from

within the program. It also doesn't provide an easy way to hook up an external program to edit the graphics. Also, the method used to bring graphics into the project seems clumsy. You must first select the graphic from a scrolling list and then drag what seems to be the preview into the main window.

Another problem is the distinction Xanthus makes between button-class objects and graphic-class objects. My experience with multimedia and computer-based training projects has taught me that randomly shaped graphics are used as buttons more frequently than actual buttons. Although it is possible for users to create a special subclass of graphics with button abilities, novices will probably feel lost.

The strengths and limitations of an authoring system usually emerge from a project of several months' duration (one that your job depends on). Despite this concern and my minor complaints, I

liked Xanthus CraftMan. The product felt good and very usable.

It is not another HyperCard clone, so it lacks compatibility with projects users may have already developed on other platforms. But by starting fresh, Xanthus was able to improve on some of the faults of HyperCard, resulting in a rich program that people without experience in Objective-C can use to create programs with a full NeXT interface and a surprising amount of functionality. ♦

BEN CALICA, a contributing editor, was formerly product manager for SuperCard, a Macintosh authoring system. His current company, Tools for the Mind, provides multimedia project management.

Group Pione

*LiveWire leads
of collabora*

by LEE SHERM

Interpersonal collaboration has been one of the key buzzwords of the 1990s, but only recently was trotted out to prove the concept. Now Adamation has the first true piece of groupware for the NeXT. LiveWire is a near-simultaneous groupware across a network. In its current incarnation, it focuses on document editing but also includes an intercom-like module, a file manager, and promises of future features to other software.

LiveWire's document editing is on a par with Write Now, which allows for multiple simultaneous users. Currently, collaboration is limited to text editing and the ability to drag in RTF, EPS, and other files with their contents immediately reflected in the LiveWire document. Using the Lip Service module, you can record voice messages for others in your workgroup. Unfortunately, these messages cannot be transmitted across a network in real time, though they can't be used for live conferencing. LiveWire will also work via a modem hookup, assuming you already established a dial-up connection.

LiveWire

One of the first true pieces of groupware, LiveWire allows multiple users to collaborate on the same document over a network. Limited to simple editing and sharing of sounds and graphics, it costs \$195 per node (four-node minimum). Adamation, 1435 Center St., Oakland, CA 94607. 510/452-5252.

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BY PENCOM SOFTWARE



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Circle 51 on reader service card

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REVIEWS

Groupware Pioneer

*LiveWire leads the way into the future
of collaborative computing*

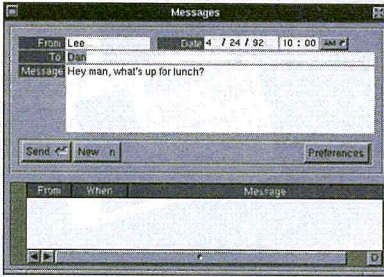
by LEE SHERMAN

Interpersonal computing has been one of NeXT's key buzzwords for several years, but only NeXTmail was trotted out to prove the concept. Now Adamation has shipped the first true piece of groupware for the NeXT. LiveWire is a technology for near-simultaneous group work across a network. In its current incarnation, it focuses on a group-document editor but also includes an intercom-like module called Bureau and promises of future hooks to other software.

LiveWire's document editor is on a par with Write Now but allows for multiple simultaneous users. Currently, collaborations are limited to text editing and the ability to drag in RTE, EPS, and TIFF files with their contents immediately reflected in the LiveWire window. Using the Lip Service panel, you can record voice messages for others in your workgroup. Voice cannot be transmitted across the network in real time, though, so it can't be used for live conferencing. LiveWire will also work via a modem hookup, assuming you've already established a dial-up con-

nection. Adamation promises to add graphics tools in the future.

Bureau is used to send messages across the network like NeXTmail, but without the delay. It also doesn't require you to keep track of user addresses. Instead, it maintains a link to NetInfo, providing Bureau with an internal database of network information.



Bureau can be used to send live messages to other users across a network

LiveWire is a shrinkwrapped product but provides an architecture for other third-party developers to turn their single-user applications into fully functional groupware. Users will see real benefits as developers like Pages and Right-Brain use LiveWire's architecture to turn their single-user versions into groupware.

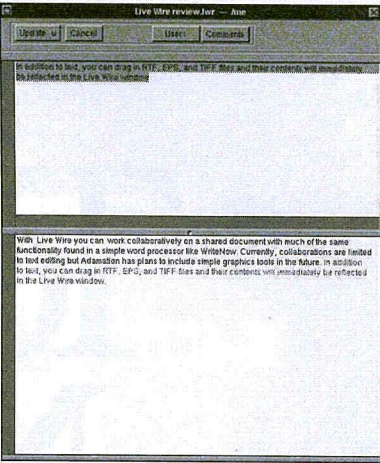
For groupware to work, you need a virtual network to which individual users can be instantly added and new groups can be established on the fly. LiveWire takes a democratic approach to the virtual network — anyone can join the group at any time and each user is an equal participant in the process of composing a document.

Group editing requires a means for locking down a portion of a

document to prevent conflicts when two people attempt to simultaneously edit the same text. Adamation's lock manager works effectively to keep conflicts from occurring. The locking interface is straightforward: Just highlight what you want to change, make the changes, and click on an update button. The changes are instantly updated across the network. The interface suffers, however, from the need to maintain a split-screen view — you can't edit the document directly.

Other aspects of the program are less than intuitive. For example, you have to remember to drag to select text. Double-clicking brings up an error panel stating that your selection conflicts with an existing one even when it doesn't.

For the most part though, the program avoids the clunky interface conventions seen in similar products on other platforms, with their multiple cursors and confusing icons. In its present form, LiveWire is more proof-of-concept than actu-



LiveWire indicates sections of a document that are locked by an individual user as gray text. The rest of the document is available for editing by anyone else in the workgroup.

al product. But as NeXT networks proliferate, and third parties support them, LiveWire could help to usher in a new wave of collaborative applications that bear the Adamation seal of approval. ♦

LEE SHERMAN is a contributing editor to NeXTWORLD.

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At Last, Last, I

RightBrain's
page-layout p

by LEE SHERMA

For desktop publ who have faced between the eas pasteboard app PageMaker and the precis graphical control of Quar RightBrain Software offer of both worlds with its ne Up page-layout program. goes both Mac programs (by applying the NeXT wa doing things every chance

As the first true page-l program for the NeXT, Pa fills a major software gap. layout programs, from Paq poration and Archetype C tion, are on the horizon.) I designers, its accurate kerr tracking, word-spacing co support for the Pantone M System may eliminate their remaining objection to goi the NeXT. Office workers in its reliance on simple dr drop techniques. It's so eas they may not even realize t doing DTP.

Even this prerelease ve of PasteUp is fast. The pro launches in a remarkable c second, making it suitable on-the-fly projects like fax sheets, maps, and even bus

"Coming Attractions" ar impressions of important un software packages. NeXTV will publish a full review wit ratings in a future issue.

At Long Last, Layout



RightBrain's PasteUp is the first true page-layout package for the NeXT

by LEE SHERMAN

For desktop publishers who have faced a choice between the easy-to-use pasteboard approach of PageMaker and the precise typographical control of QuarkXPress, RightBrain Software offers the best of both worlds with its new PasteUp page-layout program. Then it goes both Mac programs one better by applying the NeXT way of doing things every chance it can.

As the first true page-layout program for the NeXT, PasteUp fills a major software gap. (Other layout programs, from Pages Corporation and Archetype Corporation, are on the horizon.) For many designers, its accurate kerning, tracking, word-spacing control, and support for the Pantone Matching System may eliminate their last remaining objection to going with the NeXT. Office workers will revel in its reliance on simple drag-and-drop techniques. It's so easy to use they may not even realize they're doing DTP.

Even this prerelease version of PasteUp is fast. The program launches in a remarkable one-half second, making it suitable for on-the-fly projects like fax cover sheets, maps, and even business let-

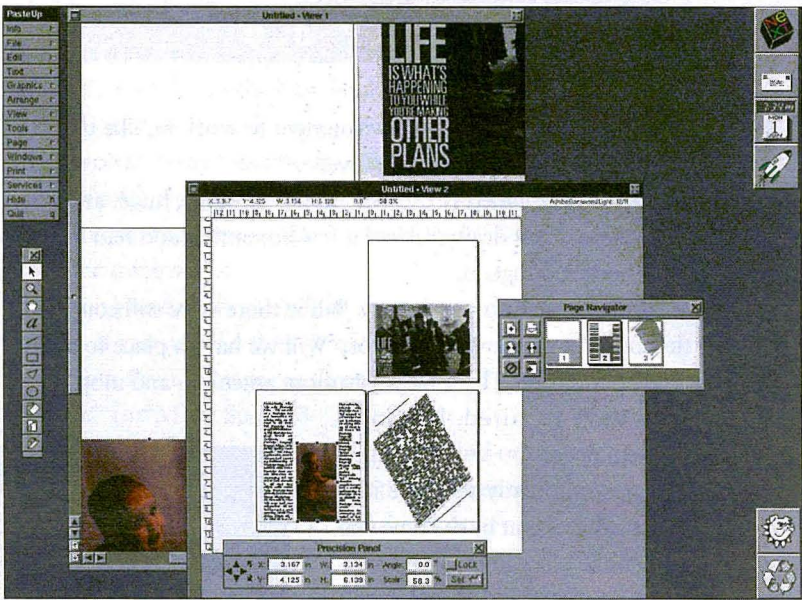
ters. Screen redraw, typically a bottleneck in publishing programs on other platforms, is virtually instantaneous thanks to Display PostScript's speedy rendering.

All elements in PasteUp can be directly edited on the page; the program is a paragon of direct manipulation. Graphics, text, colors, attributes, and even styles are all applied by dragging-and-dropping.

This object orientation gives PasteUp a realistic feel that is missing elsewhere: You see the entire object as you drag it, which you don't when working with QuarkXPress. Objects become partially transparent as they are dragged, making it easier to position them on the page. Reach-through graphics let you grab any object that is at least partially visible on-screen, even if it's on another layer.

None of these touches changes the nature of page layout — you still slap elements down on a page and tweak them until they look right. By starting from scratch, however, PasteUp's designers had the luxury of taking a fresh look at the process. PasteUp can reproduce any page done in Quark or PageMaker, but it does so differently.

Some of the improvements are subtle, such as automatically applying smart quotes, and em and en dashes, as you type. You can also customize the tool palette. Other changes are more radical. Rather than rely on the concept of master pages to automate document creation, PasteUp uses Master Ele-



PasteUp's Page Navigator permits easy access to any part of a document, while its Precision Panel allows exact scaling, rotation, and skewing of elements.

ments. Master Elements can be edited in place locally, no matter where in the document you happen to be, and the changes will be reflected throughout the entire document.

This emphasis on ease of navigation is one of the best things about PasteUp, since so much of page layout involves zooming, scrolling, and dragging. The Page Navigator panel is similar to Quark's Document Layout palette, providing thumbnail views of your pages within a scrollable, resizable window. From here you can add and delete pages, collapse and expand ranges, and jump immediately to any spot in your publication. You can maintain multiple views of the same document at a variety of magnification levels ranging from 25 to 1600 percent.

PasteUp's unique Dimensions panel will appeal to two different types of users: Those who thrive on the numerical precision achieved by typing values into a dialog box can work the way they're used to, while more hands-on types can take a freeform approach, watching the readout until the desired scale or rotation is achieved.

RightBrain knew that PasteUp would be compared to Quark, so it made sure to meet the typographic requirements of the most obsessive

graphic designer. Text can be rotated to any degree and edited in any rotation. Adjustments down to 1/1000 of an em are possible.

Anticipation is so high for PasteUp that its creators are in danger of falling off a cliff. For a 1.0, the program is amazingly full-featured and elegant in its implementation. It is not yet fully mature, though. Missing from the application are image-manipulation controls, a scripting language, and a system for third-party extensions. PasteUp also completely lacks any long-document features, such as automatic-index and table-of-contents generation, a table editor, or revision tracking. For that, you'll have to turn to the old standby, FrameMaker. Additionally, the pre-release we used for this review failed to take advantage of any of the features of NeXTSTEP 3.0.

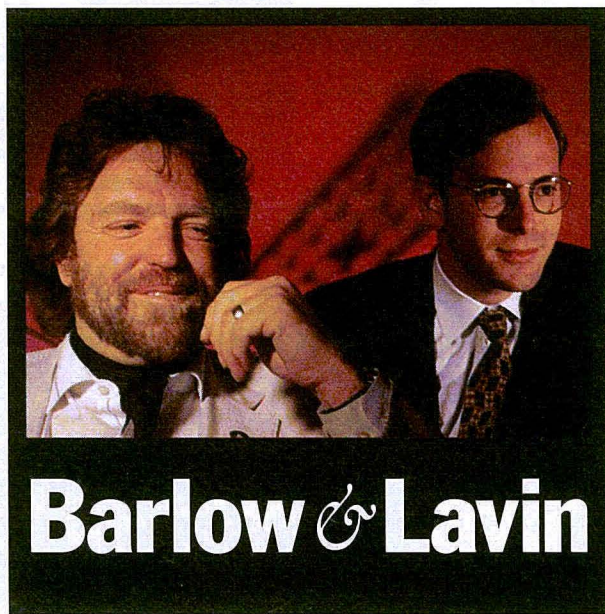
NeXT users have waited far too long for a page-layout program that worked the way they expect it to. With PasteUp, you no longer have to make the choice between usability and power. ♦

LEE SHERMAN is a contributing editor to NeXTWORLD. He can be reached via e-mail at lee@nirvana.com.

"Coming Attractions" are first impressions of important unreleased software packages. NeXTWORLD will publish a full review with cube ratings in a future issue.

reader service card

Well, perhaps that's not quite fair. It does have one characteristic often associated with arousal: good looks. If you have a color NeXT, you're going to find yourself working in the most aesthetically pleasing environment ever to grace a video display. The newly colorized icons are lush and



NeXT UNIX

More exciting are enhancements like 3DKit and software JPEG compression. These seem to be aimed at a much faster CPU than the 68040. So I guess if I'm looking for sizzle from 3.0, I'll have to wait for a processor hot enough to get all this meat cooking. Thumbs up, sort of.

Nevertheless, some complaints were repeated often enough to make

The one area in which
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Within ten minutes of I thought it was the coolest covered that it was also the and I was even happier. With from aggravated office neighbourly voice commands.

R E V I E W S

l. and benefits superficial. e of things that many e PostScript Level 2 faxing, e-mail encryp- t . . . I mean, this stuff he things I'd hoped to XTmail, or an efficient he ability to become a better way of han- ; of fonts, or better inter- ro generation. My list unately it remains so. 0 does seem like a very ndation to support - and long-term strate- run service of the cus- t contains improve- enhancements to Inter- uted objects, Novell port, and on-line help. re enhancements like e JPEG compression. imed at a much faster 40. So I guess if I'm rom 3.0, I'll have to r hot enough to get all Thumbs up, sort of. 🗣️

weenie. And despite the briars, I have slim

any of those who have -hatted way, though I y NeXTophilia. After id meant for us to use d awk. this criticism that trou- ieve there is something l by NeXT. e guys. They are, after im that, in my opinion, o our cause. He sug- y case, a request I passed in inquiry might be ad- so, I got roughly 20,000 hese words meant, nor e as qualified to mediate Carmelites. I often enough to make

one think them legitimate.

1. Everybody agrees on **sendmail**. NeXT is shipping v. 5.52. The most recent one is 5.65c.
2. **UUCP**. They're all pretty creaky, of course, but I heard several positive mentions of the HoneyDanBer **UUCP**.
3. To **automount** or to **autonfsmount**. I gather there is some considerable age difference between NeXT's and Sun's. I'm not quite sure what the problem is otherwise, but it kept appearing.
4. More diversity and recent dialer support for **tip**.
5. NeXT's **fingerd** and **rlogind** may have security holes.
6. In order to make the Sun-oids feel more at home, it wouldn't hurt to throw them a few bones like **perl**, **fingerd**, and **whois**, and more GNU-ware, like **gcc** and **gtar**.
7. There seems to be a lot of controversy over **NetInfo** that I found very hard to sort out. This really looks like a cultural problem, but it might smooth a lot of feathers to have something like Sun's flat data files in addition to the files **NetInfoManager** maintains.

I believe that, with a few such minor adjustments as these, NeXT might even become the preferred platform among UNIX weenies as well as mere mortals. 🗣️

Lavin: John, the truth is that NeXT's implementation of UNIX is superior to other platforms'. It's just one more example of NeXT planning for the future. For example, NeXT uses Mach as the core of its operating system. Mach is an advanced form of UNIX that was built from the ground up, to facilitate multiprocessing computers. We are just beginning to see the software nightmare as other vendors, such as Sun, try to shoe-horn old technology into a multiprocessor environment.

The one area in which companies like Sun and HP do have an advantage is economy of scale. You are completely right that some of the gazillion small programs that make up UNIX are brain-dead on the NeXT. The problem here is the familiar one of NeXT's limited resources. The reality is that the plaintive whining of Joe Geek has little chance to be heard compared with the plaintive whining of Joe Wall Street. 🗣️

Simon Says

Lavin: I happen to be an amateur expert on the phenomenon of computer-to-human voice communication: I have an '84 Le Baron convertible. It was a luxury auto during that brief shining moment when cars talked to humans. It tells me, due to a faulty sensor, that my washer fluid is low every time I turn on the car. It also tells me, due to a faulty operator, that my seat belt is unfastened and that I have failed to turn my lights off.

On the surface, machines talking to operators have little to do with Simon Says, in which the user talks to the computer. Still, first-time visitors to both my computer and my car are always amused with this spoken communication. A steady diet of either, however, does not even remotely measure up to initial expectations.

Within ten minutes of using Simon Says to voice-control my NeXT, I thought it was the coolest thing ever invented. Within an hour, I had discovered that it was also the first decent macro generator for the platform, and I was even happier. Within three hours, I had an axe through my face from aggravated office neighbors not clued into the joys of loud, monotonous voice commands.

But where the talking car concept was totally discredited as a human-interface solution, dying a quick and merciful death, Simon Says is in fact genuinely useful over the long haul.

You start by training Simon with the words you want it to recognize. This involves many repetitions of these words. Since inflection matters in Simon's voice recognition and remembering exactly how you said, "Show Ruler," is next to impossible, you need to develop a consistent style to make the thing work.

Then you can choose which apps you want to have under some voice control. If you are like the rest of us, you'll go hog wild, training everything from **PrintManager** to **BlastApp** and all commands from "Insert Soft Hyphen" to "Make Spline."

If you do this, though, you'll quickly find out why applications have menus. A better strategy is to limit the number of trained words to a manageable list covering only key commands in key apps. Once you get the right mix, you'll find that using your voice is truly like having a third hand.

Amazingly enough, Simon also has a powerful macro generator built in. You can construct voice-command macros that will perform keystrokes or primitive mouse events, paste text, run UNIX commands, play a sound, send mail, or do a combination of the above. The resulting macros are so powerful that I wanted them available with keyboard equivalents in addition to voice control.

Like any 1.0 product I like, there are a large number of features I would add or fix. Since voice is a whole new means of interfacing with my computer, deficiencies are magnified. But none of this takes away from the fact that the voice-recognition engine is a thing of marvel. There's no doubt that I'll keep using Simon, though that should come as no surprise. I still drive the Le Baron. 🗣️

Barlow: Dan, I suppose I shouldn't be surprised that anyone who is "amused" to be prattled at by a 1984 Chrysler Le Baron would also want to spend his days in conversation with a computer. But what the hell, most people talk to their computers all the time anyway and never get the courtesy of a response. Still, the vision of an entire office full of people talking, not to one another, but to inanimate objects, sounds like something out of Brazil to me.

Leaving aside such issues as *Modern Alienation*, I think Simon Says is pretty cool. It's a lot more successful (if used carefully) than the *Voice Navigator* on the Mac.

The main solution it provides me is related to the few quibbles I have with both Simon Says and the NeXT. This has to do with mouse religion. I like to lean back out of energized ion range from the monitor and work with the keyboard on my lap. Unfortunately, with a NeXT this means leaning forward a lot to grab for the mouse.

With Simon Says, I can reduce all that stretching a bit. But not much. That's because the macro generator in Simon Says is not very powerful by my standards. Indeed, it works best when keyboard equivalents already exist. Nevertheless, the core feature of the program, its ability to make your computer take orders, just works. I wonder if Simon's developer, Greg Cockcroft from Agog, has considered doing a port to 9 year olds. . . . 🗣️

Weenie wannabe JOHN PERRY BARLOW and building inspector DAN LAVIN mix metaphors with the best of them. Send them e-mail at: jbarlow@nextworld.com and dlavin@nextworld.com.

Library Science

The NeXT platform's integrated e-mail and fax services and ability to manipulate multiple media make it an ideal environment for document management. But until now programs for these applications, such as Boss Logic's BDMS and VISUS's Paper-Sight, have been primarily custom tools that need to be modified for each customer site.

Now Insight Software seeks to make the NeXT's capability to store, classify, and display document images available to a wider range of users with its \$395 shrinkwrapped program, ElectroFile. Sporting an elegant user interface and powerful indexing system, ElectroFile is a strong addition to the field.

ElectroFile is a complete system for storing, classifying, and retrieving documents, which can be either computer-generated files or scanned images of paper records. The program was originally developed for litigation support but is well suited for record-keeping in almost any professional organization with a high demand for document retrieval.

ElectroFile 1.02

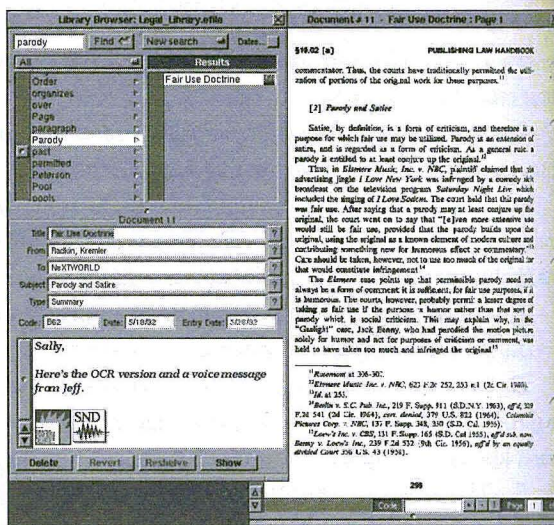
An elegant and powerful system for classifying, storing, and retrieving documents. Casual users might find it overkill for their needs. Broader scanner support and ability to revise record structure will improve an already strong program.

\$395

Insight Software, 3004 S.W. First Ave., Portland, OR 97201. 503/222-2425.

While it can also be used by individuals who want control over their files, we suspect casual users may find that the entry of multiple fields of classifying data is more effort than it's worth.

An ElectroFile file is called a Library. Its capacity for number and type of documents is limited only by disk size. To include a document in a Library, you first enter classification data about it in a window called the Front Desk. You can drag-and-drop electronic files into the Front Desk or scan images of paper documents directly into the window. ElectroFile's scanner module provides basic



Detailed classification information makes document retrieval easy.

scanner controls, including batch processing of multipage documents and LZW compression.

When creating a new Library, you determine the classification fields you'll use to enter information about the documents. The user can set any number of fields specific to

the Library. More fields mean more ways to search but also more data-entry for the indexer.

One of ElectroFile's strengths is its ability to include unclassified attachments in the Notes field. You can drag-and-drop other rich text using the program's built-in text editor, or use the File's dictation module to attach voice annotations. Especially useful attachments are scanned document images and the OCR'd version of the same.

Once a document is in the Library, you search for it using the Library Browser and the Inspector. You can easily set complex search criteria, and the program's B-tree search engine returns results quickly even from a large Library. After finding the document you want, you can display it in the Document Viewer window, zoom in and out of image, or even take over the entire

screen. Version 1.02 has a few new features. It supports only the Scan-X Color scanner and the OCR Servant character-recognition software, but an upcoming release adds support for other scanners and OCR software from Xerox and Calera. The new version will also allow classification fields to be changed after the initial setup, provide faster indexing, include a TIFF Doctor utility that rotates and scales scanned images, and more. Version 1.02 is localized for French, German, and Japanese languages as well as Kanji. The documentation is a little slim, although the on-line samples are excellent.

Insight also plans to release a network version with batch processing and advanced search capabilities at a later date. All of these features are important if the program proves truly useful in large, document-management applications.

by DAN RUBY

An Essential Drive

You knew this day was coming but its arrival is still a shock: The once-mammoth magneto-optical drive (OD) is now not only outdated, but outgrown as well—NeXTSTEP 3.0 won't fit on it. The least expensive method by far of distributing large amounts of data is CD-ROM, which NeXT has embraced with the demise of the innovative OD.

NeXT's reversal of optical-media strategy gives users greater data capacity and access to the great variety of CD-ROM discs available for other computers. The trade-off is that this read-only technology leaves us high and dry for storing data.

Despite the large numbers of CD-ROM drives on the market, NeXT is signaling its intentions by offering its own branded drive. If you've ever used CD-ROM drives before, you'll find this a slim and

compact drive. The internal power supply, fan-free design, and lack of a power light combine to make the drive completely unobtrusive.

The back of the drive has dual centronics-style SCSI ports, a push-button SCSI address selector, stereo audio-out ports, a ground connector, and a standard power cord. The face of the drive sports a headphone jack with its own volume control, activity-indicator light, eject button, manual-eject hole, and a small NeXT logo. A standard CD-ROM disc caddy, necessary for this front-loading drive, is included. You must supply your own SCSI cable. No software is needed.

Once you have attached this drive to the SCSI bus of your NeXT and your system is up and running, simply insert a CD-ROM disc into the caddy and slip it into the front slot of the drive. The disc mounts into the File Viewer. All the standard ways of ejecting discs



NeXT signals support for CD-ROM with its own branded drive.

work as expected.

Although any model of NeXT works with this drive, your version of NeXTSTEP determines the CD-ROM formats you can read. NeXTSTEP 2.0 reads only ISO 9660-formatted discs, while 3.0 users can read that format along with the Rock Ridge, Macintosh HFS, and NeXT proprietary formats.

In my testing of dozens of discs, the NeXT read every one flawlessly. While I could not run Macintosh or DOS search-engine

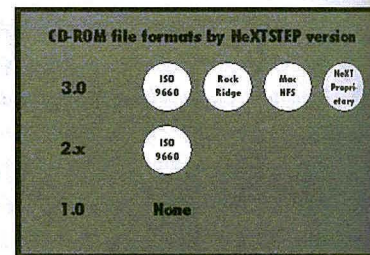
NeXT CD-ROM Drive



An excellent implementation of the basic CD-ROM drive. A necessary piece of hardware for all networks and many power users.

\$895

NeXT Computer. Call 800/848-NEXT for distribution outlets.



Each upgrade of NeXTSTEP has added support for new file formats.

software from those discs, I could generally find the files I needed just as easily with the Workspace Manager's built-in Contents Inspector.

NeXTSTEP 3.0 will be provided on CD-ROM discs, so every NeXT network site is going to need at least one drive. Power users will also want their own, to access the thousands of CD-ROM titles on the market today. NeXT's model is the best I've seen by a modest margin and the bundle offer (drive plus NeXTSTEP 3.0 upgrade for \$695) makes it an excellent value. ♦


by RICK REYNOLDS

the Library. More fields means more ways to search but also more data-entry for the indexer.

One of ElectroFile's strengths is its ability to include unlimited attachments in the Notes field. You can drag-and-drop other files, enter rich text using the program's full-blown text editor, or use ElectroFile's dictation module to record and attach voice annotations. An especially useful attachment to a scanned document might be an OCR'd version of the same file.

Once a document is entered in the Library, you search for it using the Library Browser and its related Inspector. You can easily set complex search criteria, and the program's B-tree search engine returns results quickly even from a large Library. After finding the document you want, you can display it in a Document Viewer window. You can zoom in and out of images or allow them to take over the entire screen.

Version 1.02 has a few limitations. It supports only the HSD Scan-X Color scanner and HSD OCR Servant character-recognition software, but an upcoming 1.1 release adds support for Fujitsu and other scanners and OCR systems from Xerox and Calera. The new version will also allow classification fields to be changed after the initial setup, provide faster indexing, and include a TIFF Doctor utility that rotates and scales scanned images. Version 1.02 is localized for France; 1.1 will support all European languages as well as Kanji. The documentation is a little slim, although the on-line samples are excellent.

Insight also plans to release a network version with batch processing and advanced search capabilities at a later date. All of these changes are important if the program will prove truly useful in large, document-management applications. 

by DAN RUBY

Easy Mac Networking

Among NeXT users surveyed at NeXTWORLD Expo, one third reported having Macintoshes networked to their NeXTs. The number is surprising, only because it has been difficult to network Macs and NeXTs. NeXTSTEP 3.0 support for Apple EtherTalk makes Macintosh networking easier but provides only half of the solution: NeXTs can use Apple file servers, but Macintoshes cannot recognize NeXT file servers over the network. UShare, from Information Presentation Technologies (IPT), completes the circle by allowing a NeXT to share files with a Macintosh.

Although 3.0 allows NeXTs to join a Macintosh network, retrieve files, and print to AppleTalk printers, uShare gives Macintosh networkers a reason to buy a NeXT. With IPT's product, Macintosh users can store files on a NeXT, print to a 400-dpi NeXT laser printer or color printer, and enjoy the benefits of electronic mail piped through the NeXT. Since NeXTs have larger hard drives, lower-cost and higher-resolution printers, and faster processors than even top-of-the-line

uShare



Turns NeXT workstations into Macintosh file servers. UShare installs easily, allowing Macs to store files on the NeXT, print to NeXT printers, and receive e-mail (ASCII only). NeXTs can share Mac-connected PostScript printers. Because it just works, we highly recommend it.

**\$645 complete package (one user),
\$1895 (five user), \$2795 (unlimited)**

**\$295 file server (one user),
\$995 (five user), \$1395 (unlimited use)**

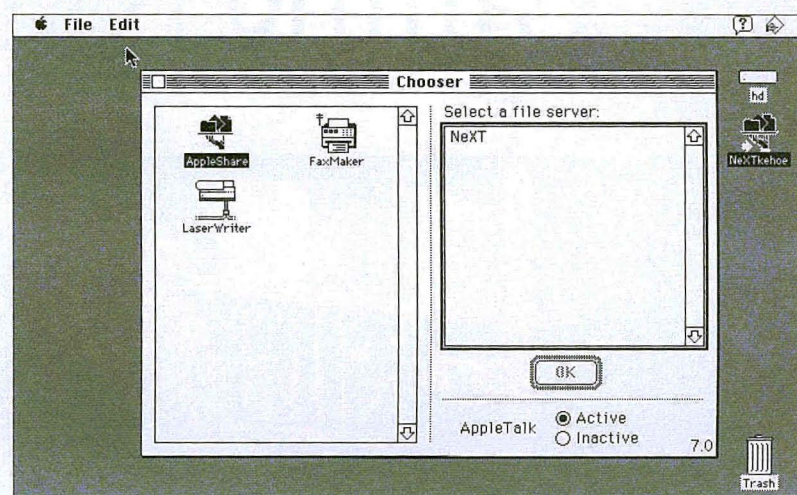
**\$195 print spooler (one user),
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Information Presentation Technologies,
555 Chorro St., Ste. A, San Luis Obispo,
CA 93401. 805/541-3000, 800/233-
9993; e-mail: info@iptech.com.

Mac Quadras, there's good reason to use NeXTs as servers for Macintosh networks.

Macintosh network administrators may balk at using a UNIX-based server, especially if they've

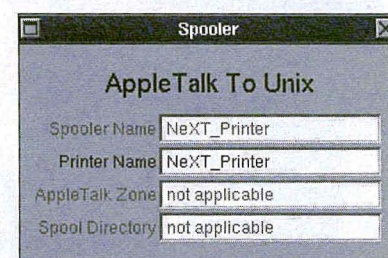


IPT's uShare turns a NeXT workstation into an AppleShare file server, accessible from a Macintosh's Chooser.

ever set up Apple's A/UX operating system or TCP/IP-based connectivity software. Such software forces a grisly acquaintance with IP addresses, gateways, host files, and authentication daemons. UShare is vastly simpler: Connect Macs and a NeXT with an Ethernet cable, click on the uShare install package, click a selection in uShare's NeXTSTEP menu, and your NeXT becomes an AppleShare file server.


The only problem I found was that Apple's System 7.0 supports Apple's EtherTalk Phase 2 protocol, which NeXT does not support in NeXTSTEP 2.1 (Phase 2 support is promised in NeXTSTEP 3.0). I had to hunt for an old EtherTalk Phase 1 file to drop into my Mac System folders. Once I had accomplished that, my NeXT showed up in the Macintosh Chooser as a legitimate AppleShare server, and my NeXT printers were accessible from any Macintosh application.

Network performance was equal to anything I've experienced on an Apple-only network, even while I was using the NeXT for



Macintoshes can print to 400-dpi NeXT printers.

you won't want to refuse.

I reviewed a version of uShare that came complete with file server and print spooler for \$645. IPT also sells the uShare file server, print spooler, and mail host as separate modules, for \$295, \$195, and \$195, respectively. I consider the software a good value. Installation is simple, the manual is clear, technical support is responsive, and the product provides genuine utility for users who own NeXTs and Macs. Connectivity software need do nothing more to earn my strong recommendation. 

by DANIEL MILES
KEHOE

Why NeXT owners keep calling NH (toll-free).

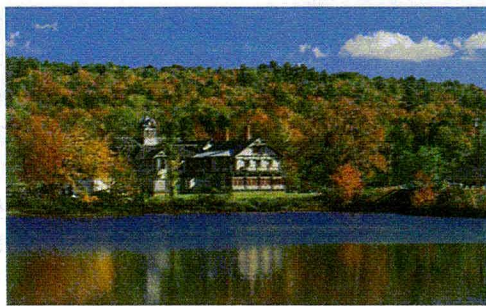


Much like you, Casey and Jerry spend their days surrounded by NeXT hardware and software.

We can save you more than just money.

We offer one-stop shopping for everything you need for your NeXT computer — whether you're an individual user or a corporate/educational/government buyer. Our prices are the lowest you'll find. And we deliver every in-stock non-COD order overnight for only \$3 (continental U.S. only).

Just as importantly, our toll-free technical support services can save you a lot of time and frustration. You see, we don't just sell NeXT software



Our headquarters are located in the old "Christmas Trees Inn" in Marlow, NH.

and peripherals, we use them. And we're in regular contact with the people at NeXT as well as most companies developing products for NeXT computers. All of which puts us in a unique position to help you overcome any confusions, illusions, obfuscations, or complications you encounter on whatever upgrade or enhancement paths you travel.

When it comes to the products we sell, if there's a shortcut, we've probably heard of it; if there's a problem, chances are we've already dealt with it; and if there's an incompatibility, we can help you resolve it.

So next time you're trying to figure out how to get the most out of your NeXT computer, give us a call. Because our goal is to be your source for NeXT products *and* to provide the information you need to get the most out of them.



We also have offices in a converted sawmill across the mill pond.

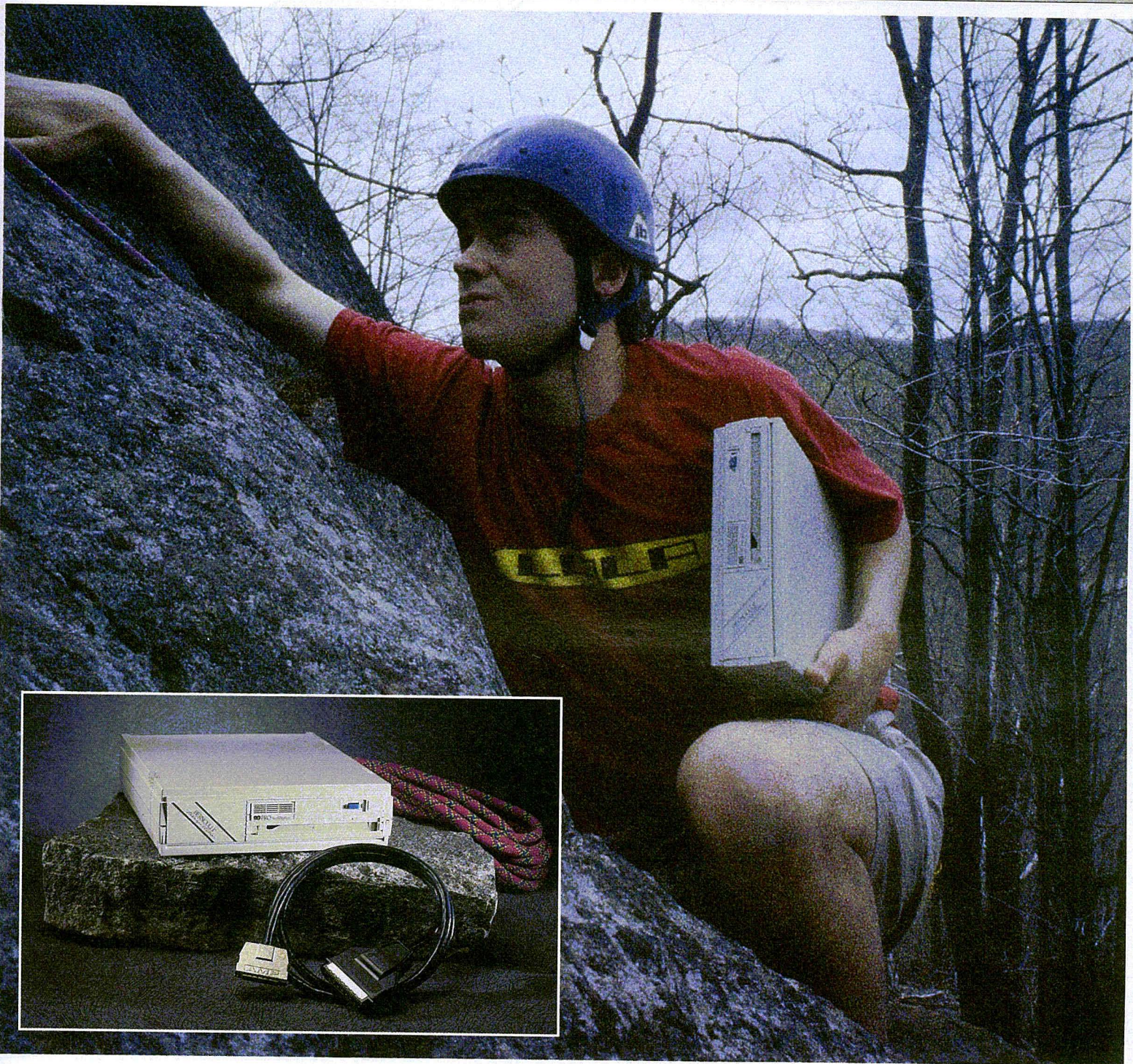
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BERNOULLI TR

The 90 turns PRO. The new delivers higher performance previous popular Bernoulli d even better version of the re *Byte Readers' Choice* and *Jr.* The new Transportable PI time of 18 ms and can be d: drives. It still weighs just ov and cooler than ever. Best o before! And when you send free 90 MB Cartridge.

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BERNOULLI TRANSPORTABLE PRO

The 90 turns PRO. The new **Bernoulli Transportable 90 PRO** delivers higher performance *at a lower price* than Iomega's previous popular Bernoulli drives. That's right—this is an even better version of the removable drive that's won the *Byte Readers' Choice* and *InfoWorld Product of the Year*.

The new Transportable PRO provides an effective access time of 18 ms and can be daisy-chained with additional SCSI drives. It still weighs just over eight pounds and runs quieter and cooler than ever. Best of all, our price is \$199 less than before! And when you send in the warranty card, you'll get a *free 90 MB Cartridge*.

Bernoullis feature an innovative design that makes a crash

virtually impossible because the flexible medium is suspended below the fixed read/write head—the two don't make any contact. And **Bernoulli Gold Standard Removable Disks** are manufactured from extremely rugged polycarbonate cases to withstand shocks up to 1000Gs. Buy your cartridges in the **90 MB Tri-Pack** from us and enjoy unlimited storage for well under \$2 per MB.

All it takes to plug your NeXT into unlimited Bernoulli storage is a NeXT Interface Kit. Interface kits are also available for Macs and PCs, so you can connect to virtually any other host machine. Plus, like NeXT computers themselves, the Bernoulli 90 MB Transportable switches

automatically from 110 to 220 power, so you can take it *and use it* anywhere.

Looking for the speed of a hard disk, the portability of a floppy, and the unlimited storage of a tape drive? You're looking right at the PRO. Enhanced Bernoulli performance at a great new low price.

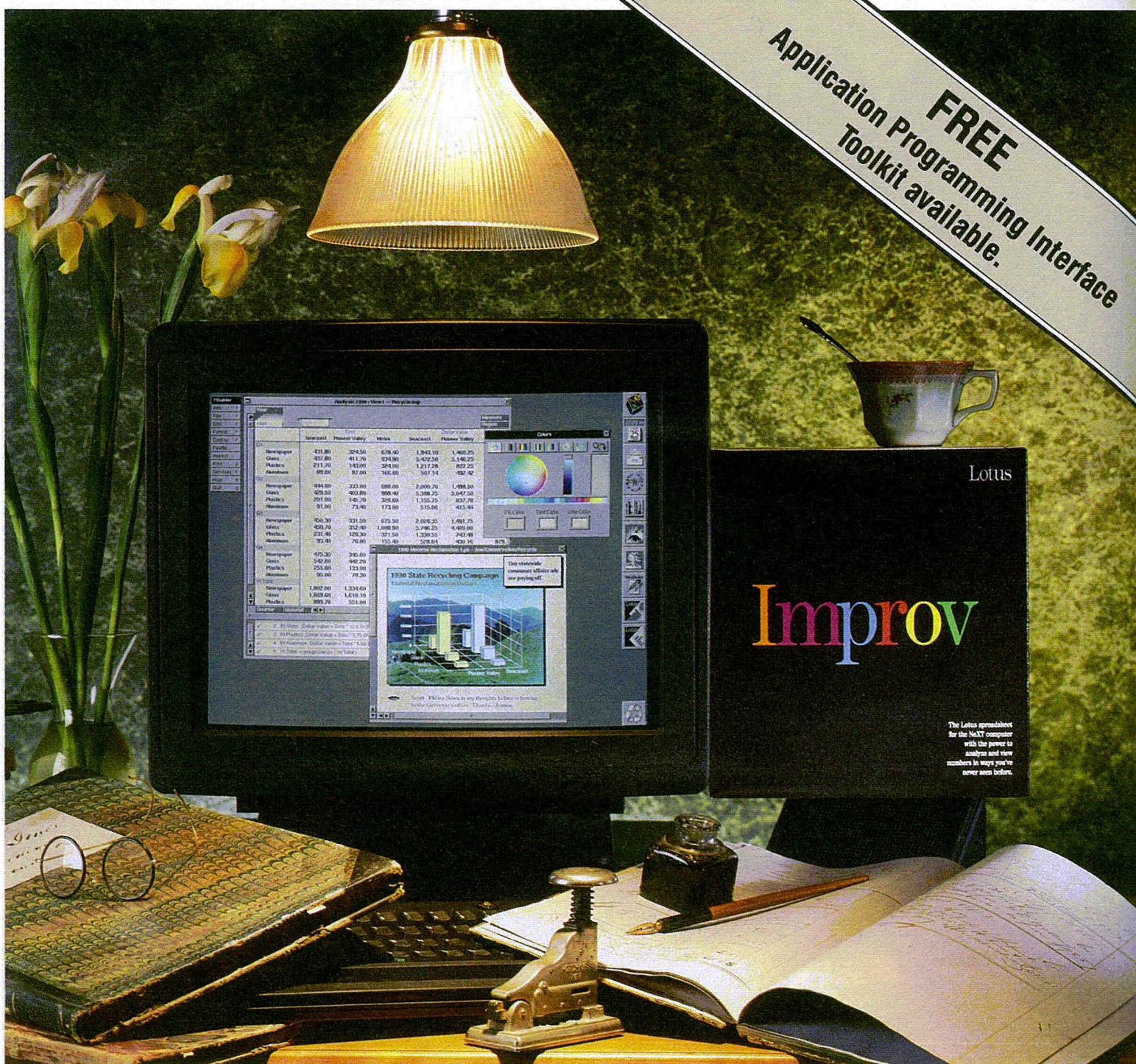
IOMEGA ... 1 year warranty

6499	Bernoulli Transportable 90 PRO	\$679.
2530	Bernoulli 90 PRO Cartridge	149.
2467	Bernoulli 90 PRO Cartridge (<i>tri-pack</i>)	439.
7151	NeXT Interface Kit	65.
2481	Care Kit	49.

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Application Programming Interface
FREE
Toolkit available.



LOTUS REINVENTS THE SPREADSHEET.

LOTUS IMPROV

Look at your data in a whole new light. What happens when you give the creators of the world's best-selling spreadsheet an 040 processor and 8 MB of RAM and let them improvise to their heart's content? You get Lotus Improv, a revolutionary spreadsheet for analyzing, viewing, and presenting your data in ways never before possible.

Improv's unique dynamic-view feature lets you see the same data in multiple ways to explore data relationships and prepare targeted reports. Just use the mouse to rearrange your spreadsheet and get a whole new view instantly, without any re-keying. You can actually work with 12 different dimensions of data at once, displayed in 2D or 3D format.

Improv lets you use plain English to define cells and create formulas (e.g., "Dollars = Tons x 12.5"). So your spreadsheets document themselves and are easy to modify and re-use. For complex formulas, you can call on a host of built-in Lotus 1-2-3-style functions. All of which makes it easy to build spreadsheets from scratch. You can also use the extensive collection of prepackaged templates and/or import existing 1-2-3 files directly.

Improv lets you combine graphs, texts, images, and even sound with stunning clarity and resolution that take full advantage of NeXT. But how good is it, really? *Byte* (10/90) wrote, "Improv knocked me out." *PC World* (11/90) called it "a stunningly simple approach to organizing complex data."

What Micro? Magazine (UK, 4/91) awarded it "Most Innovative Product 1990." And *InfoWorld* (10/91) wrote, "Improv is an exciting alternative to traditional spreadsheet programs...it's one of the most innovative programs we've seen in some time."

And for a limited time, Lotus is offering a deal that any number cruncher will appreciate. Buy both Improv and Insignia Solutions' *SoftPC* (see opposite page) at the same time and save \$129!

Lotus Development

9794 Improv 1.0.....	\$549.
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Latest versions only.

"Ranks as one of the most NeXT." That's what *NeXTW* because it allows you to run right on your NeXT system, Which means it protects your software and training and gives you 50,000 MS-DOS applications. Whether you're using a spreadsheet file, or want an easier way to speak with your PC-based those platform barriers in a SoftPC duplicates an IBM

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spreadsheet
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OPEN THE DOOR TO DOS.

SOFTPC

"Ranks as one of the most important programs for the NeXT." That's what *NeXTWorld* (4/91) said about **SoftPC** because it allows you to run virtually any MS-DOS application right on your NeXT system, *without any additional hardware*. Which means it protects your investment in existing MS-DOS software and training and gives your NeXT access to the over 50,000 MS-DOS applications currently on the market.

Whether you're using a specialized PC program or data file, or want an easier way to get along (technologically speaking) with your PC-based co-workers, SoftPC will leap those platform barriers in a single bound.

SoftPC duplicates an IBM PC/AT with 80286 and 80287

processors. It lets you access two hard drives, comes with MS-DOS 3.3 (you can install 4.0), and provides support for EGA and CGA video modes in monochrome and color. It can also support two RS-232 serial ports and two parallel ports that can be directed to NeXT serial ports or to any UNIX device, process, or file. In other words, all your NeXT modems, printers, floppy drives, and other serial peripherals can be used by your PC program. Plus your NeXT keyboard and mouse can function as a 101-key AT keyboard and Microsoft Mouse, respectively.

When it comes to performance, SoftPC and NeXTstep make a great team. You can run multiple DOS windows and even run NeXT and DOS software side by side. Sharing files

is as easy as cutting and pasting. There's also support for EMS 4.0 expanded memory—in fact, SoftPC can open up 32 MB of RAM, enough for even the most RAM-intensive applications. Note, however, that while SoftPC will work on any system running NeXTstep 2.0, a 68040 processor is recommended.

The power of the NeXT. The application library of DOS. That's SoftPC.

Insignia Solutions

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THE GRAPHICS TOOL THAT SHOWS THE WAY.

DIAGRAM!

Now you can show exactly what you mean. Diagram! is a smart, general-purpose graphics tool designed for business graphics and technical drawing. When it comes to graphically describing information, no other application matches its power and flexibility.

By taking a new approach to creating graphics, Diagram! is far faster than conventional drawing tools. Users can drag and drop graphical elements into their documents without selecting different tools for drawing and editing. With Diagram!'s user-extensible palettes, frequently used drawing symbols are only a mouseclick away. And when it comes to editing and revision, no other drawing tool even comes

close—lines and text labels automatically redraw themselves, ending hours of revision headaches. Now you can concentrate on ideas rather than the mechanics of drawing.

Diagram! is also an ideal tool for developers of "mission-critical" custom apps who want to draw initial plans and requirements through CASE drawings. Data flow and entity relationship diagrams are made easy—and the extensible palettes even support custom or in-house design specification systems. Diagram! also speeds common documentation tasks such as adding descriptive callout text to screen shots or interface mock-ups.

With its ability to link files and applications to drawings, Diagram! is also the perfect tool for integrating and navigating

your whole world of information. Double-clicking links in Diagram! documents brings up spreadsheets, word processors, or other NeXTstep applications. To include EPS and TIFF images, just drag and drop. And, of course, images generated in Diagram! can be easily copied and pasted into other applications—like *Concurrence* (see opposite page).

Diagram!, the graphics program designed for people who use them every day.

Lighthouse Design, Ltd. ... 60 day MBG
8621 Diagram! 1.1 **\$339.**

No hidden charges.

POW

CON

"Worth the price of a NeXT." Barlow described *Concurrence*, NeXTstep's first general-purpose application, and one of the '92 NeXTWorld Expo. Create best-selling *Diagram!*, *Con* the business of communication.

Concurrence's outliner is collapse and expand capabilities and labels make it a breeze outlines. Plus, with the built-in topic formatting features, y



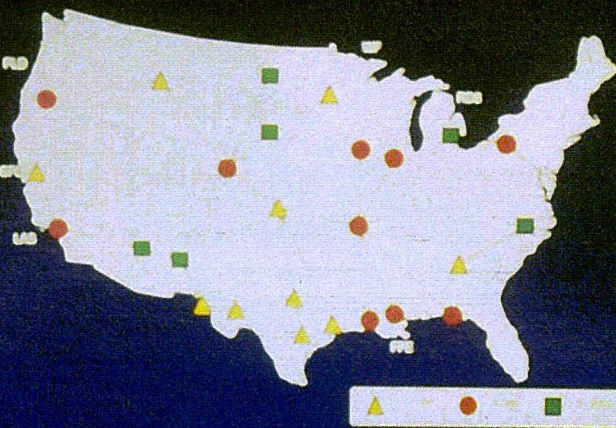
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Technology Enhancement

- Increased capacity
- Better availability
- Superior quality



POWERFUL PRESENTATIONS COME TO NEXTSTEP.

CONCURRENCE

"Worth the price of a NeXT all by itself." That's how John Barlow described **Concurrence** (*NeXTWorld* Spring '92), NeXTstep's first general-purpose presentation and outlining application, and one of the major highlights of the January '92 NeXTWorld Expo. Created by the same team behind the best-selling *Diagram!*, Concurrence is the tool for anyone in the business of communicating through presentations.

Concurrence's outliner is built for brainstorming. The collapse and expand capabilities, drag-and-drop text, rulers, and labels make it a breeze to create even the most complex outlines. Plus, with the built-in spell checker and automatic topic formatting features, you can get professional-quality

results immediately. You can even use multiple views to create several versions of the same outline, and modify them all simultaneously!

Just push a button to hot-link a presentation to your outline. With its voice-overs and drag-and-drop graphics, Concurrence makes multimedia presentations on your NeXT a reality today. To bring the true power behind NeXTstep to your Concurrence presentations, add file links from other applications (such as *Diagram!*) and choose from an impressive array of transition effects. You can also create multiple versions of the same presentations, using different fonts, colors, and backgrounds—they'll track each other word for word. In no time at all, you'll be preparing high-impact

presentations for delivery across your entire organization!

And when it comes to quality output—whether it's viewgraphs, 35mm slides, or overheads—just hook your NeXT to any PostScript output device or send your Concurrence documents via NeXT Mail to one of Lighthouse's qualified service bureaus. As the review in *NeXTWorld* (Summer '92) put it, "Concurrence is a compelling piece of software that NeXT users won't want to live without."

Lighthouse Design, Ltd. ... 60 day MBG
2409 Concurrence 1.0 **\$795.**

Call 1-800/800-NeXT to order.

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WINGZ

It takes spreadsheet power to new heights. Wingz is the easy-to-use, high-performance graphic spreadsheet for business and technical professionals. You can combine numbers, words, charts, and graphics in one window and print to one page—all with one product. The Wingz worksheet is 32,768 rows by 32,768 columns (more than a billion cells) and includes over 140 built-in functions, 2D and 3D charts, and support for as many colors as your system can display.

Wingz includes HyperScript, an English-like event-driven development environment, and DataLink, an SQL database access tool. HyperScript was written specifically for graphical application development and allows you to place functional buttons, scrolling lists, and other controls right on the worksheet. And with its built-in LEARN mode, even novice users can create their own applications or customize the Wingz environment quickly and easily. DataLink, which was written in HyperScript, gives you point-and-click access to data in Informix SQL databases without having to know SQL. Just point and click at the data you need—you never have to leave Wingz' friendly graphical environment. DataLink also includes a function library so you can build custom front-end applications for your SQL database and Executive Information Systems (EIS).

Other features include powerful text capabilities—including fields for free-floating text on the worksheet, with multiple text-processing options and attribute settings—and the ability to import/export Wingz graphics as EPS images.

Minimize your reliance on MIS and create your own applications and reports with Wingz!

Informix Software
3332 Wingz 1.1AB **\$469.**

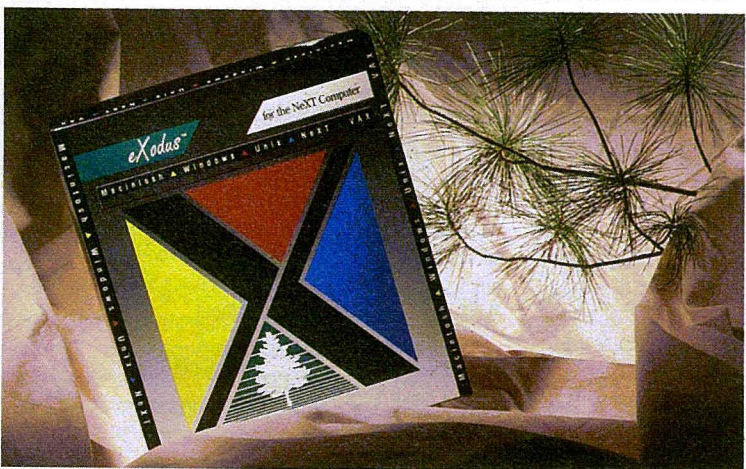


MEDIASTATION

The power of a traditional database. Combined with advanced multimedia technology. Use MediaStation to add pictures to your personnel records. Or music to a teaching file. Or maps and animations to an interactive training system. In other words, it lets you capture, search, and organize data from multiple media, and then generate reports and presentations—all in one coherent, integrated application.

MediaStation supports high-res image scanning, CD-quality sound recording and editing, frame-by-frame animation, and DSP audio devices. Plus it can function as a multimedia file server over a high-speed Ethernet network, complete with password protection. Imagine the possibilities...

Imagine Multimedia, Inc.
1396 MediaStation 2.1 **\$495.**
1397 MediaStation (5 pack) **2199.**
1398 MediaStation (20 pack) **5499.**
1400 MediaStation (Educational) **295.**



EXODUS

eXodus leads the way to the promised land of X and NeXTstep integration.

Applications using the X Window System are seamlessly integrated into NeXT's remarkable graphical user environment with eXodus. Use it to connect to X applications on any host that supports TCP/IP—Sun, HP, IBM, DEC, etc.—or run X programs installed directly on your NeXT. eXodus allows NeXTstep and X apps to run simultaneously, side by side. So you can maximize your NeXT investment and training while saving the cost of additional X terminals.

eXodus operates on NeXT computers running NeXTstep 2.0 or later and supports the built-in TCP/IP and Ethernet standards. It's easy to install, and no special hardware or software is required! The package is based on X11, Release 4 of the X Window System from MIT, and comes with some basic X programs to help you get started. From the same people who developed eXodus for the Macintosh.

White Pine Software
6316 eXodus 1.0 **\$239.**

Overnight shipping \$3.

Appsoft

NeXTstep Version



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APP

Powerful word processing for use, and power: everything co developed especially for NeXT pages, and documents with a effortlessly. Control text, fonts look. WriteNow makes word p concentrate on what's importa

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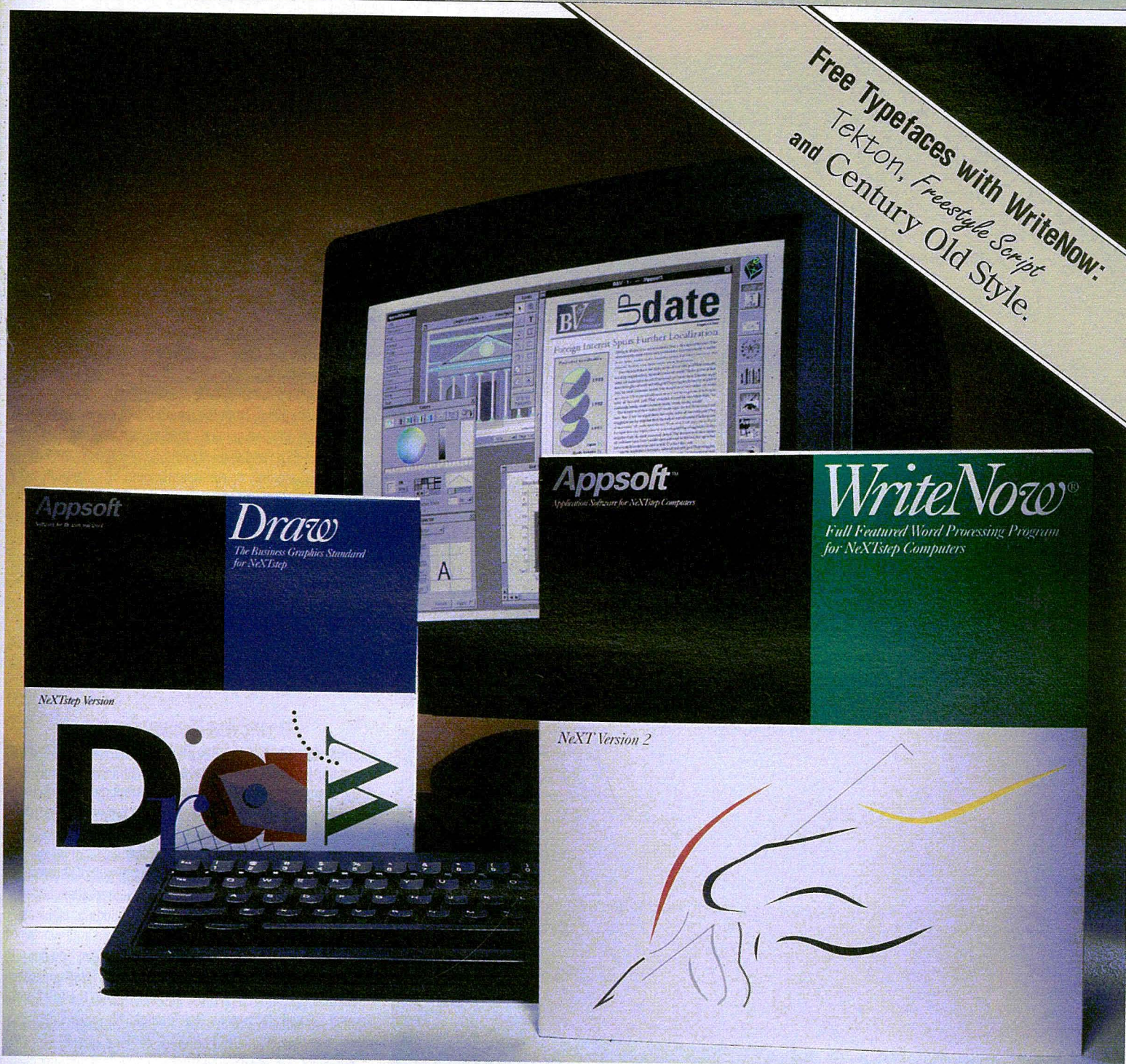
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\$239.

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Free Typefaces with WriteNow:
Tekton, Freestyle Script
and Century Old Style.



POWERFUL WORD PROCESSING AND DRAWING FROM APPSOFT.

APPSOFT
Powerful word processing for NeXTstep. Simplicity, ease of use, and power: everything comes together in **WriteNow 2.1**, developed especially for NeXTstep. Format entire paragraphs, pages, and documents with a single stroke. Bring in graphics effortlessly. Control text, fonts, and spacing for the right look. WriteNow makes word processing intuitive so you can concentrate on what's important: your message.
WriteNow is loaded with powerful features. Graphics manipulation, headers and footers, multiple columns, line spacing, mail merge, spell checking, search and replace, character and word counting, pagination, and date insertion—with all this at your fingertips, what more do you

need? How about free Adobe typefaces? For a limited time, WriteNow comes with Tekton, Century Old Style, and Freestyle Script plus *ClickArt* Images from T/Maker, all *free* (a \$200 value).
The business drawing solution for NeXTstep. With **Appsoft Draw**'s simple interface, powerful drawing tools, and multi-page capabilities, you'll be creating effective presentations, multi-page newsletters, and professional looking artwork in a flash. Appsoft Draw's comprehensive tool palette offers a host of drawing tools for fast, interactive control of lines, arcs, rectangles, polygons, beziers, 24-bit color EPS and TIFF images, and much more. You get complete control over text:

change fonts, kerning, width, and justification; scale and rotate text to any size or angle; or wrap it to curves or pre-set dimensions. Special effects like gradients, patterns, arrowheads, line sizes, and styles make for stunning graphic designs.
With all this power, you don't need to be a master to create top-quality illustrations, maps, presentations, and slides—all you need is Appsoft Draw.
Appsoft ... 60 day MBG
4128 WriteNow 2.1 \$159.
4997 WriteNow 2.1 (5 pack) 739.
4465 Draw 2.0 299.
7028 Draw 2.0 (5 pack) 1295.

Call 1-800/800-NeXT to order.

NeXTConnection™



WHO'S CALLING?

Clear the Desk! Just add **Who's Calling?** to your NeXT computer and forget about traditional Rolodexes, phone logs, message pads, and calendars. You'll have a fully automated client management and scheduling system with modules for tracking client information and conversation histories and sending live network messages. Since it's on your NeXT, you'll be able to attach sound, images, and documents to client records. And for your own special requirements, you can add an unlimited number of custom data fields that are user definable and can also be queried.

Program features will remind you when to call a client (Calendar), make the call for you (Speed Dialer), provide you with complete data on the person you're talking to (Conversation Manager), and plan the next callback (Tickler). On a NeXT network, you can send live messages to other users, schedule group meetings, and have multiple users query a central database.

If your calls are billable, **Who's Calling?** will automatically calculate client billing from the length of the call. In addition to billing logs, it will also generate mailing labels, client lists and conversation logs, and display or print upcoming events in daily, weekly, monthly or six-monthly view. The program even facilitates exporting and importing of data. It's everything you need to always know **Who's Calling**.

Adamation ... 30 day MBG
3357 **Who's Calling? 2.5**..... **\$295.**

OBJECTIVE TECHNOLOGIES

No more dated data. Objective Technologies' new **OTProvide** automatically links your database with your **Improv** spreadsheets giving them immediate access to the current data. Every time you open a spreadsheet, the latest data is imported to refresh the model so you can be confident that your calculations are based on the most up-to-date information.

OTProvide also lets you browse through multiple servers, simply by pointing to the data you want. Join multiple tables across databases, specify sort keys, and include or eliminate duplicate rows. Your queries can then be stored and maintained and their results can be loaded into **Improv** models. You can also drag queries out of **OTProvide** and into any NeXTstep application.

Version 1.0 requires **SYBASE** and **Improv** with the API Toolkit. Version 2.0 will also access **Oracle** databases and will be released at the same time as NeXT's DBKit.

SqlBuddy, the newest tool from OTI, is a user-friendly interface for relational databases. Also try Objective Technologies' developer tools designed to enhance developer efficiency and consistency: **GraphPalette** (tools for graphing data in custom applications), **MathPalette** (to create links to **Mathematica**), **SmartFieldPalette** (data input fields that restrict and format input), and **ChooserPalette** (which provides management functions for selection lists).

Objective Technologies
3282 **OTProvide 1.0**..... **\$699.**
7142 **SqlBuddy (floating license)**..... **399.**
9344 [OT Palettes: 2.0] **Graph**..... **1259.**
9346 [OT Palettes: 2.0] **Math**..... **650.**
9345 [OT Palettes: 2.0] **SmartField**..... **650.**
9347 [OT Palettes: 2.0] **Chooser**..... **429.**



Corporate, educational, and government accounts welcome.

WH.

Here's the solution for everyone else—organizing a networked group calendar and everything, from reorganizing the Democratic Party to managing multiple events, creating calendars and ticklers for events with documents, images, and sound.

Say the national sales office is out of the times and dates. Enter the meeting rooms, track of the registrants for the rooms as necessary. Attach calendars and enter any relational database technology. Centrally keep track of the display construction, presentations, and more.

You won't have to worry about the call—with **What's Happening** up and remind you of events. You have various levels of networked, readable, or writable. Last affected calendars on your what's possible and what remember to attach the files. All set? Then print and schedule some time.

Adamation ... 30 day MBG
6817 **What's Happening**

OBJECTIVE

Simple Sybase access or Either one is yours with **Objective** interface is designed to be able to quickly format data into SQL. Building a simple application you design the user interface using the Interface Builder support it and make the connections. You'll automatically.

DB Toolkit fields include text and float, each with template validation. Each field can be a valid choice for character pop-up. Images and large database objects and you can integrate sound. Multilingual with **DB Toolkit**—as many supported through ASCII text any programs or windows.

Best of all the program's capabilities are limited. Any field value can be internal variables can be used to field or from window to single field and you can even Objective-C. **DB Toolkit** is for who needs the power of **Sybase**. **DB Toolkit** is compatible includes a new database management **Improv** and intelligent form.

Professional Software
9357 **Objective DB Toolkit**

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that restrict and format
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NeXTConnection™

WHAT'S HAPPENING

Here's the solution for group scheduling. Get yourself—and everyone else—organized with **What's Happening?**, the networked group calendar manager that can handle anything and everything, from reminding you of your anniversary to organizing the Democratic National Convention. You can manage multiple events, people, projects, and resources and create calendars and ticklers (one time or recurring). Tag any event with documents, images, or any other type of file.

Say the national sales conference is coming to town. Block out the times and dates on the calendars of everyone involved. Enter the meeting rooms available and their itineraries and keep track of the registrants for each event. Then assign and reassign rooms as necessary. Attach the latest updates to individual calendars and enter any site changes as appropriate. Use the relational database technology of What's Happening? to centrally keep track of the various projects and their deadlines: display construction, entertainment contracts, rentals, media presentations, and more.

You won't have to worry about missing a date, a lunch, or a call—with What's Happening?, your system will actually speak up and remind you of everything you've scheduled. Need to have various levels of network security? Events can be private, readable, or writable. Last minute change? Pull up all the affected calendars on your screen at one time and you'll see what's possible and what is simply not. (While you're at it, remember to attach the file with the president's speech to his calendar.) All set? Then print and distribute the final calendars and schedule some time to practice your "It was nothing" smile.

Adamation ... 30 day MBG
6817 What's Happening?.....\$219.

OBJECTIVE DB TOOLKIT

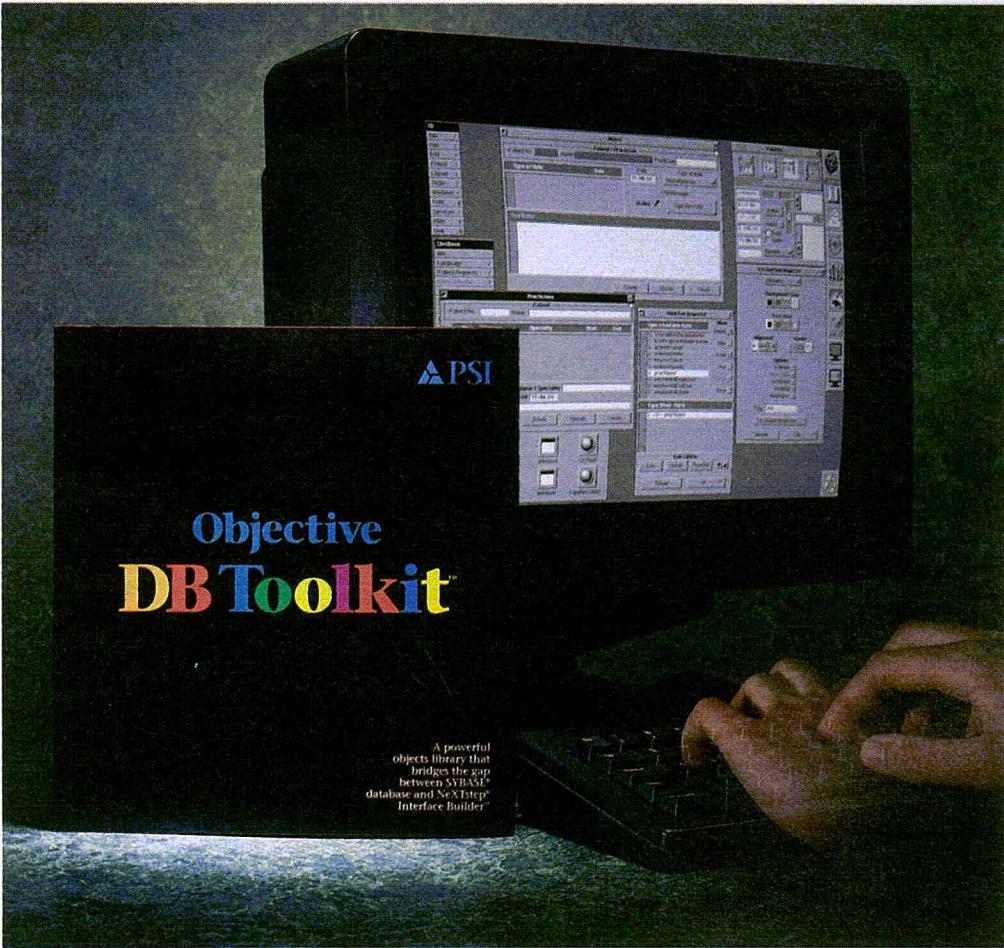
Simple Sybase access or sophisticated Sybase applications. Either one is yours with **Objective DB Toolkit**. The database interface is designed to be simple enough for untrained personnel to quickly format database queries; all you need to know is SQL. Building a simple application follows all the NeXT standards: you design the user interface from your application specifications using the Interface Builder. Then build the data structure to support it and make the connections with standard SQL statements. You'll automatically get a basic reporting capability.

DB Toolkit fields include character, integer, date, money, and float, each with templates to allow character-based input validation. Each field can be associated with two levels of help and valid choices for character fields can be displayed with a pop-up. Images and large text are handled just like any other database objects and you can even use a tape recorder to integrate sound. Multilingual applications are also a natural with DB Toolkit—as many languages as you want are supported through ASCII tables so you don't need to change any programs or windows.

Best of all the program's ease of use doesn't mean your options are limited. Any field value can be substituted in SQL statements. Internal variables can be used to communicate data from field to field or from window to window. Exits can be cascaded in a single field and you can even add some specialized exits in Objective-C. DB Toolkit is for the serious application developer who needs the power of Sybase without the pain of 3GL coding.

DB Toolkit is compatible with NeXTstep 3.0. And now it includes a new database management tool, an interface to *Improv* and intelligent form management.

Professional Software
9357 Objective DB Toolkit 2.0.....\$895.



Call 1-800/800-NeXT to order.

NeXTConnection™



Aachen, Revue,

University Roman, Freestyle Script

Bodoni 1

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ADOBE CASLON EXPERT COLLECTION

Century Old Style

COPPERPLATE GOTHIC

ITC Fenice™

Futura™ 1

Futura 2

Garamond 3™

Adobe Garamond™

ITC Garamond™ 2

ITC Garamond Condensed

Gill Sans™ 1

Gill Sans 2

Goudy 1

Helvetica™ Condensed

Helvetica Neue 1

Helvetica Neue 3

LITHOS™

Minion™

Mistral™, Reporter™ No. 2

News Gothic

Nuptial, Cascade, Medici™

Optima™

Sonata™

Tekton™

Univers™ Condensed

Adobe Wood Type 2

Birch™

Blackoak

Madrone™

Poplar™

Willow™

ADOBE

Serious graphic and typographic power. Whether you're designing business graphics, high-impact ads or flyers, technical illustrations, or even original art, get your hands on **Adobe Illustrator**.

Start from scratch or Auto Trace existing EPS or TIFF images, complete with color shades and hues. Then enhance your drawing with airbrush, contour, highlight, and fill effects. Enter and edit text directly, using various type sizes and styles and features like text wrap, kerning, and custom letterforms.

You can specify type and color (including PANTONE) with NeXT font and color panels and edit pages in "preview" or "preview selection" mode to see changes instantly. Plus NeXT services like Mail and Librarian simplify file transfers and text searches.

For even more sophisticated typographic design, **Adobe TouchType** lets you manipulate letters all sorts of ways (e.g., rotate, condense, expand), position them anywhere on the page, and has very powerful kerning features.

Ready to build up your type collection? The **Adobe Plus Pack** (22 popular Type 1 PostScript fonts) and **Adobe TypeSet Packages** both offer big savings over buying individual fonts.

Adobe Systems

1827	Adobe Illustrator 3.0.1	\$459.
9741	Adobe TouchType 2.1.1	175.
9765	Adobe Plus Pack 1.0	129.
1832	Adobe TypeSet 1	65.
1833	Adobe TypeSet 2	65.
1834	Adobe TypeSet 3	129.

TELEDIA

Three little jewels. Protect your work with **Backup Master**. Incremental backups save time and media. Compatible with any backup device (Floppy, optical, Floptical, DAT, 8mm tapes...). Restore files easily from a NeXTstep file browser. Enjoy voice control with **PhrasePlayer**. This digital dictation machine will adapt pauses between words and phrases to your typing speed, and can be controlled by your voice. Use it to type your voice mail or rehearse a speech. Need a flat-file database for multiple users with easy data entry, flexible layout design, and sophisticated queries? **FileMaster** allows immediate data entry without having to define fields. When you need a layout, you can drop in a PostScript or TIFF file as a background. Queries can use multiple files spread over a network.

Teledia

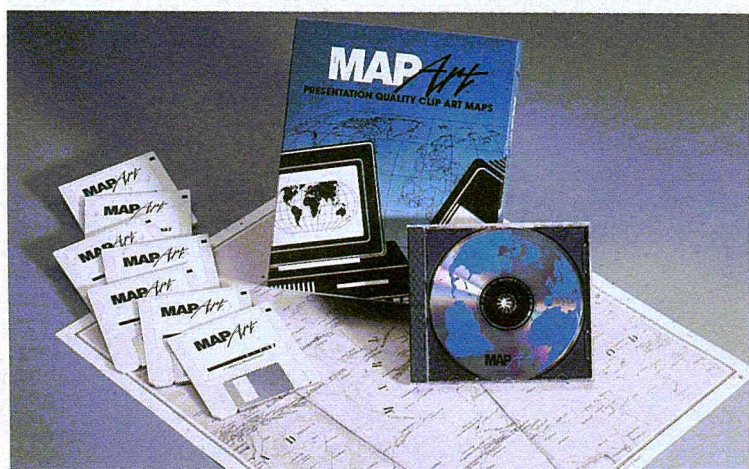
2513	Backup Master 1.1	\$249.
7144	Backup Master 1.1 (floppy only)	79.
2514	PhrasePlayer 2.0	129.
4726	FileMaster 1.0	299.

MAPART

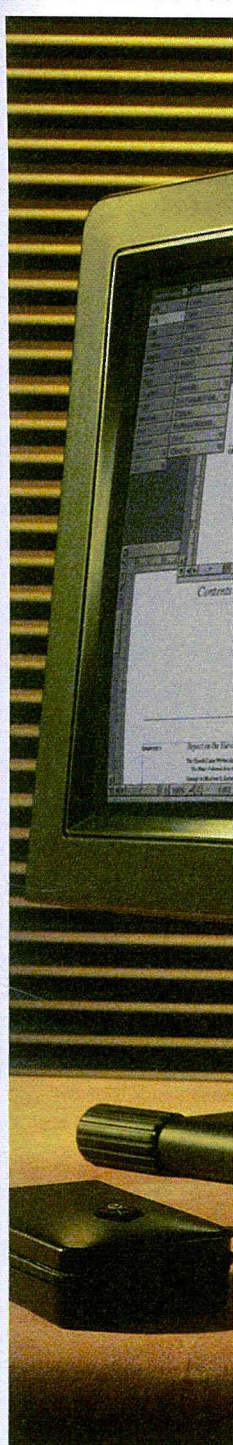
Maps for desktop publishing and graphic design. Imagine over 5 MB of high-quality map graphics at your fingertips! With **MapArt**, you get a comprehensive-map collection that makes it easy to create attractive map graphics for brochures, newsletters, and presentations. Customize maps with Adobe Illustrator or import as background images in most NeXT applications. Maps feature country/state borders, latitude/longitude lines, and country/city names. Since each feature is a separate object, you can select areas, modify text, and add graphic symbols or text to create your own design. MapArt includes four world maps, 12 regional maps of all world continents, plus detailed maps for 24 major countries that show state/province boundaries. Now available on CD-ROM, too!

MicroMaps ... 30 day MBG

9276	MapArt 1.0	\$95.
2337	MapArt 1.0 (CD-ROM)	95.



Toll-free technical support.



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FRAN

The ideal document publishing groups. Imagine WYSIWYG graphics, tables, and even e **FrameMaker**—all the writing for long, structured documentation, policy manuals specifically designed to be used together across multiple platforms compatibility between 25 different Macintosh (and even won a The sophisticated page-layout to create up to 25 master pages

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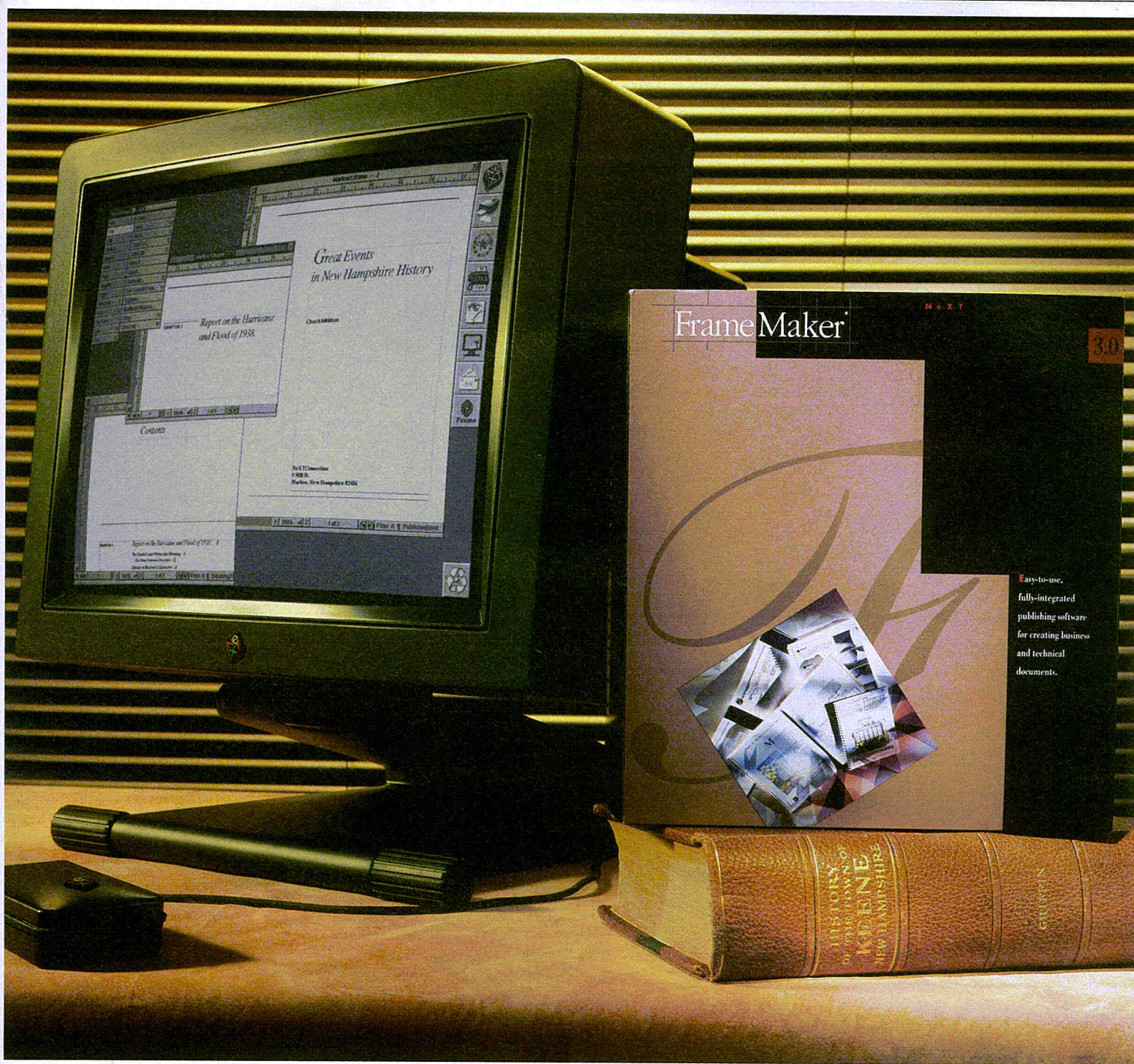
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ANY DOCUMENT. NO MATTER HOW COMPLEX.

FRAMEMAKER

The ideal document publisher for corporate work-groups. Imagine WYSIWYG word processing, page layout, graphics, tables, and even equations in one program. That's **FrameMaker**—all the writing and graphic tools you need for long, structured documents like textbooks, software documentation, policy manuals, and proposals. And it was specifically designed to be used by multiple authors working together across multiple platforms. In fact it offers 100% compatibility between 25 different UNIX platforms and the Macintosh (and even won a 1991 *MacUser* Eddy Award). The sophisticated page-layout features include the ability to create up to 25 master pages (i.e., page formats) per

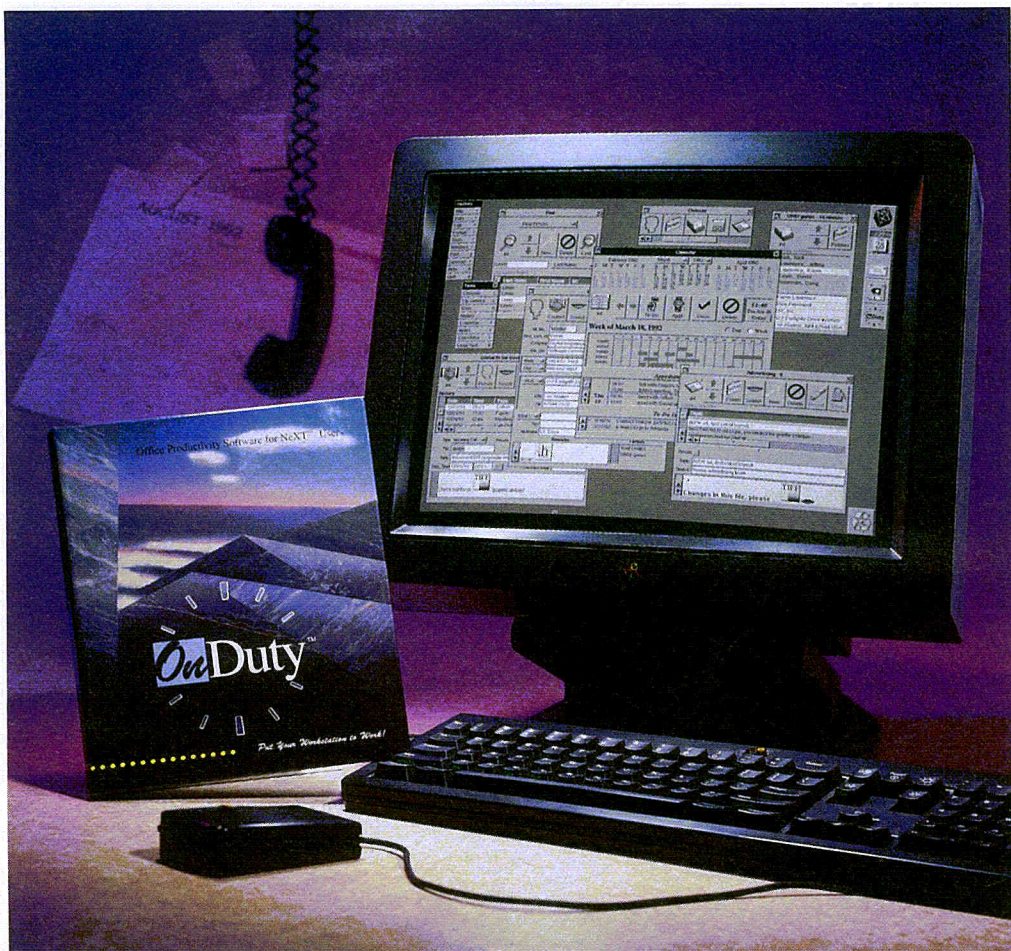
document. So you can ensure consistency as new files are incorporated and documents are revised, edited, and rearranged. You can also create extensive tables of contents, lists of tables, indexes, and cross references that will automatically update whenever your document changes. FrameMaker's flexible drawing tools include a broad palette of pen and fill patterns for drawing detailed forms, diagrams, or complex schematics. The word processing capabilities rival those of dedicated word processors. There's a 130,000-word spelling and hyphenation dictionary; search and replace; automatic page, paragraph, and footnote numbering; and a complete equation palette with over 250 symbols, delimiters, and operators.

You can also create complex multi-page tables—complete with graphics and equations that include multiple styles in a single cell. And there's an ingenious conditional text feature that lets you develop multiple variations of a document from a single source file by simply tagging the variable text or graphics. As *NeXTWorld* (Fall '91) wrote: "If your work calls for long documents with large page counts, multiple chapters, tables, lists, illustrations, and indexes, then you won't believe your luck...FrameMaker is as good as they come."

Frame Technology
8241 FrameMaker 3.0..... **\$595.**

Call 1-800/800-NeXT to order.

NeXTConnection™



OnDuty

Your very own efficient, electronic executive secretary.

"If you think you get too many e-mail messages and too many phone calls, this program can make all the difference in the world." That's the resounding endorsement *NeXTWorld* (Summer '92) gave **OnDuty**.

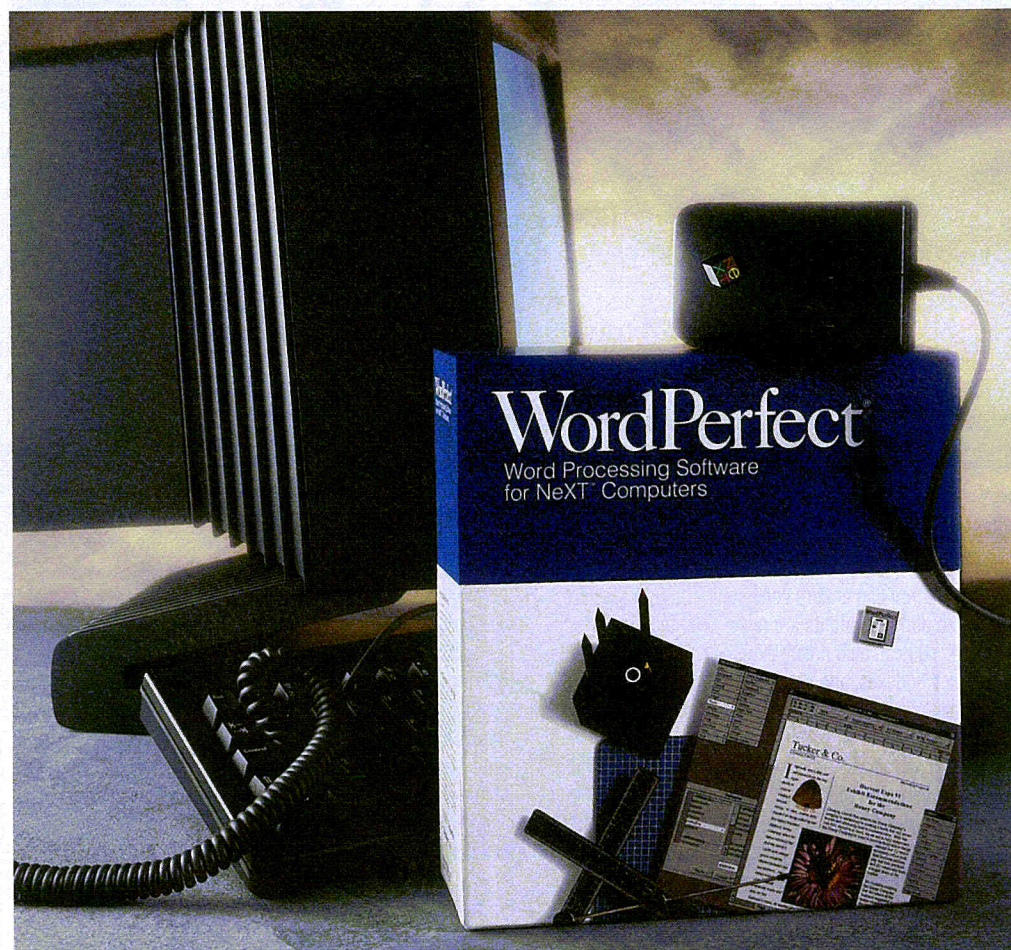
This comprehensive information manager helps you keep track of appointments, reminders, customers, clients, friends, calls, ideas, sales, and meetings. Why, with the help of **OnDuty**, you can finally even remember your anniversary and important birthdays.

The Calendar comes with a scheduler that shows free time slots at a glance and alarms to make sure you remember those appointments. The Contact Manager tracks calls with a built-in stopwatch, maintains an accurate contact history, and reminds you of callbacks through the Calendar. You can review either your own contacts or your whole workgroup's!

What if you can't remember that person's name? The Name Manager lets you find it by first or last name, company, zip code, city, etc. To keep things even more organized, put names into user-defined folders and then browse through them on the "Rollafile" panel.

Documents and voice notes can be linked to notes, appointments, and reminders just by dragging and dropping the document's icon. And any record can be either public or private. Plus there's a full range of reports available—including name reports in mail-merge form. **OnDuty**: it does everything but make the morning coffee.

Digital Instrumentation Tech. ... 1 year warranty
8657 OnDuty 1.0..... **\$279.**



WordPerfect

WordPerfect unleashed! Full-time WYSIWYG and effortless multitasking. There are a whole lot of DOS users of **WordPerfect** out there who are struggling with whether they should start using their favorite application under Windows or on the Mac. Well, the answer is neither. If you want to realize **WordPerfect**'s full word-processing potential, the solution is NeXT.

NeXT's unified PostScript imaging system puts the infamous **WordPerfect** Preview mode to rest once and for all. Every element, including fonts of all sizes, headers, footer, footnotes, graphics, and columns, always appear just as they will print. And NeXT features like built-in multitasking and fax capability make **WordPerfect** the ultimate power tool for working with words.

But, of course, not *just* words. **WordPerfect** easily integrates text and graphics. Just grab your image file with the mouse and drop it on the page wherever you want (inserted in a line of text, tied to a paragraph, or even placed in a header or footer). You can scale, move, and rotate your images every which way, and add captions and borders with ease. Each time the type will automatically rearrange itself.

Naturally, you get all the basic word-processing power features **WordPerfect** is famous for: parallel and newspaper columns, powerful macros, mail merge, table of contents, indexing, footnotes/endnotes, a 115,000-word spell checker, thesaurus, and automatic timed backup. Any Questions? Ask the Digital Librarian or consult the online reference manual. This is truly full-featured word processing for NeXT.

WordPerfect
8818 WordPerfect 1.0.1..... **\$299.**

No foam peanuts. We use 100% recycled paper to pack.



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and *Aldus FreeHand*, Altsy
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up. Any Questions? Ask
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ssing for NeXT.

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NeXTConnection™



DRAW ON EXPERIENCE.

VIRTUOSO

Get professional drawing results with tools from the drawing professionals with the advanced PostScript drawing design and production program, Virtuoso. As the developer of award-winning graphics programs such as *Fontographer* and *Aldus FreeHand*, Altsys knows what you need most from a drawing program—speed, ease of use, and an advanced feature set so you can get the job done quickly, easily, and professionally. Altsys has taken their knowledge and experience and combined it with the power of the NeXT to bring you Virtuoso.

You can create artwork free-style with the Freehand drawing tool or import it from the extensive, professional

clip-art library. Draw basic shapes and lines with the rectangle, oval, and straight line tool, or get fancy with the Multigon and Pen tools. Rotate, reflect, scale, and skew objects quickly and easily. Autotrace scanned images with superb control.

Virtuoso also gives you the editing, coloring, and organization tools you need to create your designs. Undo or redo—not just the last few actions, but up to 100 levels. Zoom in or out—not just 100% or 200%, but up to 1600%. Choose spot process colors from the NeXT Color Panel then drag and drop them into objects. Automatically create percentages of any color with the Tint Panel. Maintain your work in an unlimited number of nameable, reorderable

layers—each one separately hideable and lockable.

Wonderfully flexible PostScript support, meticulously accurate alignment control, superb text editing and typographic control, varied import and export capabilities, comprehensive built-in production tools (including color separations, spot-to-process conversions, and on-screen previews)—all this is just the beginning of the list of innovative and productive features in Virtuoso, each designed to simplify your work and stimulate your creativity.

Altsys
6931 Virtuoso 1.0 (available September '92)..... **\$549.**

Call 1-800/800-NeXT to order.

NeXTConnection™



ISDN SYSTEM ADAPTER

Connect to the new standard of voice and data capabilities. It's called ISDN—Integrated Services Digital Network, a standard digital telecommunications technology for integrated voice and high-speed data transmission. And with software developed to support it, you'll be able to handle all your voice and data communications from your NeXT computer with exciting new capabilities like multiple sessions over one line and improved voice communications.

Hayes ISDN System Adapter is an external RS-232 serial port device that provides compatibility with AT&T and Northern Telecom ISDN switches and will support future switch updates including the National ISDN standards. The ISDN System Adapter comes complete with its own Digital Signal Processor (DSP), codec, high-speed processor, and power supply. It's all the hardware you need to bring ISDN to any platform and an analog phone. It fully implements Hayes' Standard AT Command Set for ISDN (which means you can access its power through familiar Hayes-compatible software) and Hayes AutoStream (which, with supported software, opens the door to multiple voice/data sessions).

Data transmission from 300 bps to 38,400 bps is supported, and voice capabilities include a standard analog phone interface along with battery feed and ring voltage for up to three typical analog devices (e.g., phone, fax, and answering machine).

This is truly the new age of telecommunications and, as you would expect, Hayes is there on the front lines with NeXT.

Hayes ... 2 year warranty

4998 ISDN System Adapter (requires cable)..... **\$1199.**

METARESEARCH

High-quality video and sound for every NeXT. Now you can put the power of your DSP port to full use. **Color Digital Eye** grabs video from a camcorder, VCR, or other video source. Still pictures have a resolution of up to 640 x 480 at 24 bits of color and you can grab animation at 160 x 120/15 frames per second. And it comes bundled with *ColorSnapshot* and *ColorMovieWorks*.

Digital Ears and **SoundWorks** give you incredible control over sound on your NeXT. Digital Ears is used to input CD-quality sound, while SoundWorks lets you edit, create and apply your own effects, and mix sounds.

Metaresearch ... 1 year warranty

9682 Digital Ears	\$499.
9683 Digital Ears (with SoundWorks)	669.
4848 Color Digital Eye	995.
9680 SoundWorks 2.0.....	269.

PERIPHERAL LAND

It's always drive time at PLI. PLI's **SuperFloppy 2.88 Drive** can handle any format 3.5" diskette. You can read, write, and format all NeXT and DOS densities and third-party software is available that provides the same support for Mac formats. The **PLI CD-ROM Drive** features the latest Sony engine for extraordinarily fast access time. It's compatible with any NeXT machine running Mach Release 2.0—no special drivers are needed. Get speed and infinite capacity with the **Infinity Optical 3.5" Drive**. New magneto-optical technology provides 35 ms average access time and full rewritability on a removable, crash-proof 105 MB formatted cartridge. So however you want to save, backup, or transport data, PLI has the answer.

Peripheral Land, Inc. ... 1 year warranty

8547 SuperFloppy 2.88 Drive	\$449.
8899 PLI CD-ROM Drive	749.
7143 Infinity Optical 3.5" 128 MB Drive	1695.
4847 Infinity 88 Turbo.....	879.



Call us anytime from 8:00 a.m. Monday thru midnight Friday.



RIGHTBRAIN

Here's everything you need i and page layout. It's called the *PasteUp*, *Portfolio*, *TypeView*, *TypeSet 2*, all bundled together. *PasteUp* is RightBrain's ex- citation. It combines sophistica- graphic precision with an intu- optimum creativity, productiv- page-layout programs are pus- *PasteUp* capitalizes on NeXT's- oriented programming, Displa- speed networking. You've got

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ADAPTER

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..... **669.**
..... **995.**
..... **269.**

andle any format 3.5" disk- id third-party software is **CD-ROM Drive** features the ble with any NeXT machine ed and infinite capacity with ovides 35 ms average MB formatted cartridge. So nswer.

..... **\$449.**
..... **749.**
..... **1695.**
..... **879.**



READY TO DESKTOP PUBLISH ON NeXT?

RIGHTBRAIN SOFTWARE

Here's everything you need to master type, graphics, and page layout. It's called the **PasteUp Publish Pack**: *PasteUp*, *Portfolio*, *TypeView*, *RightBrain Rulers*, and *Adobe TypeSet 2*, all bundled together for the price of *PasteUp* alone. *PasteUp* is RightBrain's exciting new page-layout application. It combines sophisticated typographic, color, and graphic precision with an intuitive WYSIWYG interface for optimum creativity, productivity, and speed. While other page-layout programs are pushing the limits of their platforms, *PasteUp* capitalizes on NeXT's unique combination of object-oriented programming, Display PostScript, UNIX, and high-speed networking. You've got to see it!

Portfolio is a scrolling palette that holds 1.25" x 1.25" miniatures of all your TIFF and EPS images ready for any application. No more remembering image file names! Now you can select them visually. *RightBrain Rulers* are horizontal and vertical rulers that float above any application. Which makes it much easier to do things like align objects, compare image sizes (even across multiple documents), and center graphics. You can lengthen, shorten, flip, or scale your rulers; and even lock them together to move like a T-square. A real time-saver. *TypeView* helps you take advantage of all the features of all your fonts. You can, for example, quickly view a font's entire character set, find an unusual character, and paste it into

your document; or open a text window and see how a paragraph would look in various typefaces and styles. Adobe TypeSet 2 gives you 7 PostScript Type 1 outline fonts including Cooper Black, Copperplate Gothic, Franklin Gothic No. 2 Roman, Juniper, Lithos Bold, Peignot Demi, and Present Script. Desktop publishing on NeXT. RightBrain's ready when you are. **RightBrain Software ... 30 day MBG**
6809 *PasteUp Publish Pack*..... **\$595.**

Call 1-800/800-NeXT to order.

NeXTConnection™



ELECTROFILE

Electronic filing arrives. Introducing a real solution for document management that gives you the power to locate any type of file—text, TIFF, EPS, etc.—quickly and easily. No matter how many files your library contains.

ElectroFile from Insight Software allows you to build your own classification scheme, based upon your own requirements. Because documents can be indexed and classified in numerous ways, they become much easier to locate—even those without text. ElectroFile's retrieval engine is based upon B+Tree indexes which generate fast searches, regardless of the number of documents in the library. You can design complex search paradigms with just a few keystrokes, thereby reducing thousands of possibilities down to the right one. Once you find the file you're looking for, just click "show" and ElectroFile will display an image of the original document alongside the classification interface. Then you can make corrections, attach other files, add notes or important text, and even record voice messages on the document.

And now ElectroFile is compatible with a variety of high-speed scanners and optical character recognition (OCR) systems. So you really can use it as a paperless filing cabinet. Just scan images and documents directly onto your hard drive via ElectroFile and forget about hard copies altogether!

Designed to be both powerful and flexible, ElectroFile is ideal for imaging, cataloging, customer support, account processing, or any activity which can take advantage of cross-indexing. After all, if you own a NeXT computer you're already halfway to having the world's most sophisticated filing system right there on your desk—now, with ElectroFile, you can go all the way.

Insight Software ... 60 day MBG
3308 ElectroFile 2.0 **\$449.**



DOVEFAX DESKTOP

A fax and modem combined. The **DoveFax Desktop for NeXT** features a 9600 bps CCITT Group-3-compatible fax that makes full use of the intuitive NeXT fax interface so you can send any kind of document directly from your NeXT. DoveFax features true background operation, an on line telephone directory, automatic answering, fax preview, and customized cover pages. You can send faxes at high resolution and print incoming faxes at your choice of 200 x 200 dpi or 200 x 100 dpi Display PostScript.

DoveFax Desktop also includes a Hayes-compatible 2400 bps modem that supports a complete range of communications services, protocols, applications, and electronic bulletin boards. The **DoveFax 14.4 Pro** handles everything the DoveFax can, but has a 14,400 bps data modem with V.32, V.42/V.42bis advanced data compression and error correction for throughput up to 57,600 bps. You can also send faxes at 14,400 bps (downward compatible to 9600 bps). Both modems are backed by Dove's solid customer support and 1-year warranty.

Dove Computer ... 1 year warranty
9356 DoveFax Desktop **\$279.** 7154 DoveFax 14.4 Pro **\$549.**

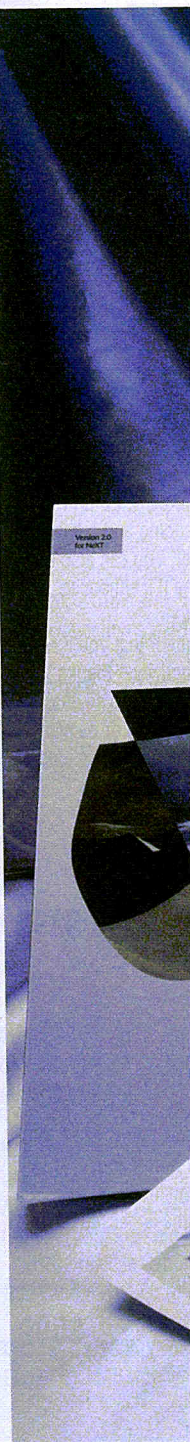


MICROPOLIS

How much data can a hard drive hold? If it's a Micropolis **MicroDisk**, up to 1.1 *gigabytes*. And that's *formatted* on the NeXT. These super-capacity, high-performance, external disk drives can swallow multimedia and other huge files in a single gulp. They feature effective access times as low as 3.9 ms and data transfer rates as high as 10 MB/second. In fact, in a *BYTE* (11/90) lab test of high-capacity drives, a MicroDisk won first place overall for its "exemplary sequential write numbers and killer results on the tree copy test." Each one is 100% Novell compatible, NetWare Ready, and comes with a five-year drive warranty, sturdy power supply, 50-pin SCSI cable, external SCSI terminator, and a silent, high-flow cooling fan.

Micropolis ... 5 year warranty
8984 280 MB MicroDisk (*formatted*) **\$1589.**
4415 550 MB MicroDisk (*formatted*) **1889.**
4412 860 MB MicroDisk (*formatted*) **2395.**
6808 1.1 GB MicroDisk (*formatted*) **2595.**

No hidden charges.



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Flatbed scanning at : just the beginning of t
you get with the new
Canon. Its convenient
text, graphs, drawing
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Novell compatible,
supply, 50-pin SCSI

..... **\$1589.**
..... **1889.**
..... **2395.**
..... **2595.**

NeXTConnection™



GIVE YOUR OFFICE A BETTER SCAN.

CANON IMAGE SCANNER

Flatbed scanning at 300 dpi, 256 shades of gray. That's just the beginning of the advanced image-handling technology you get with the new gray-scale **Image Scanner IX-30F** from Canon. Its convenient flatbed design accomodates books, text, graphs, drawings, maps, and pictures. The typical page can be scanned in about ten seconds. And there's even an optional document feeder available that will scan up to 20 pages automatically. Plus its small 13.5" x 18.5" footprint makes this one scanner that won't monopolize your desktop.

Bundled with the IX-30F is Canon's **IX-SCANS** software which can emulate from 50 dpi up to as high as 400 dpi with magnification, which enables the Scanner to reproduce

photos and other continuous-tone images with great accuracy. You can modify images by enlarging or reducing, and adjusting contrast and brightness. You can also create the special looks you need with functions like image reversal, mirror image, windowing, and downloaded dither patterns.

For further refinements, simply capture your scanned image as a TIFF or EPS file and import it into other applications. Setup is simple—it's a straightforward SCSI connection. For those who aren't yet into the NeXT level of computing there are also optional interfaces available for connecting to both Macs and PCs.

Whatever your scanning needs—desktop publishing, research, documentation, presentations, etc.—the Canon

Image Scanner IX-30F along with Canon IX-SCANS software gives you the combination of speed, resolution, and convenience you need to make it a productive part of your office environment from the day you plug it in.

Canon ... 1 year warranty
3269 Image Scanner IX-30F & IX-SCANS Bundle .. **\$849.**

Call 1-800/800-NeXT to order.

NeXTConnection™



MICROPHONE II

Great communications software has arrived. With **MicroPhone II**, you'll have easy, intuitive communications software that takes full advantage of NeXT capabilities.

Watch in amazement or, better yet, do something else entirely, while MicroPhone II dials your mail service and automatically downloads your messages in the background.

Next time you log onto your favorite service, turn on the *Watch Me* feature and your keystrokes will be saved. Give the resulting script a button and you're never more than a click away. If you've written MicroPhone scripts in Windows or on the Mac, you'll discover you can use them on the NeXT with little or no modification.

And wait until you see Loran, a new MicroPhone II document that includes front ends to CompuServe Mail and Software Ventures' own BBS. Even though you send and receive mail from entirely different systems, the Loran interface you use is the same, saving you time and effort. Eventually, Loran will hold additional front ends for news, messaging and other services, making it a true information valet. You can also build your own NeXT front end with MicroPhone II's enhanced scripting power and NeXT's Interface Builder.

It's so easy to be online with MicroPhone II that you'll soon be doubling your pleasure and your productivity—thanks to multi-session capability that allows you to log onto several information services simultaneously. Safely send or receive anything—text, pictures, or sound—through a comprehensive set of file transfer protocols such as ASCII, XMODEM, YMODEM, and ZMODEM.

Insanely great software for an insanely great computer.

Software Ventures ... 30 day MBG

4759 MicroPhone II 1.0 **\$295.**

PROMETHEUS PROMODEMS

The Ultima(te) in fax modems. Sending large files and faxes can tie up the phone lines and transform your phone bill into a budget breaker. The solution is high-speed transmission. Well, you won't find a faster data/fax modem for your NeXT than the **ProModem Ultima**. It's a 14,400 bps data modem combined with a 9600 bps send/receive fax modem. Fully Hayes-compatible, the modem features true V.32bis compliance for raw speed connections of 14,400 bps and up to 57,600 bps with V.42bis/MNP 5 data compression and error correction!

The Ultima supports the Class II standard for fax modems, ensuring compatibility with the built-in fax software in the NeXTstep operating system. ProModem Ultima is backed by a two-year warranty.

Prometheus ... 2 year warranty

2197 ProModem Ultima (includes 14.4 Modem) **\$599.**

TOSHIBA DISKS

Toshiba, the NeXT choice in 2.88 MB ED Floppy Disks. NeXT chose Toshiba 2.88 MB floppy disks to include with each NeXT system for very good reasons. Toshiba invented and patented the new technology behind 2.88 MB disks and has 14 years of experience with 2.88 MB disk technology. Over that time, Toshiba developed a new recording medium—*barium ferrite*—and a new recording technology—*perpendicular recording*—to bring you twice the storage capacity of a conventional HD diskette with greater data security and twice the transfer rate. Toshiba 2.88 MB floppy disks are made in the USA using a new standard of manufacturing expertise that's well beyond those used today for conventional diskettes. So while other diskette makers are just learning about 2.88 MB ED disks, Toshiba delivers 14 years of experience in every one of their 2.88 MB ED floppies.

Toshiba ... lifetime warranty

4858 Toshiba 3.5" ED Floppy Disk (5 Pack) **\$29.**

9755 Toshiba 3.5" ED Floppy Disks (10 Pack) **55.**



Overnight shipping \$3.

MDS

A removable drive at a for anyone who needs to of data—in other words large spreadsheet, grap files that today's sophi

The **MDS 88 Remov** mechanism. It has a 20 use as your everyday di 60,000-hour MTBF (me Other features includ you can change the SCSI power outlets (to power a single switch), and bc status lights.

The MDS 88 is also e 50-in SCSI connectors i be changed without dis

So if you're ready for great solution. It comes and SCSI 2 cable and is NeXTConnection's toll-f

MDS Drives ... 2 year

6804 MDS 88 Remova
3603 MDS 88 Remova
3600 MDS 88 Remova

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512 MB Optical Cartric

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Canon ... 90 day war

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MDS REMOVABLE DRIVE

A removable drive at a remarkable price. Here's the answer for anyone who needs to archive or transport multiple megabytes of data—in other words, anyone trying to deal with those rather large spreadsheet, graphics, multimedia, and other business files that today's sophisticated applications are generating.

The **MDS 88 Removable Drive** features the reliable SyQuest mechanism. It has a 20ms average seek time—fast enough to use as your everyday drive as well as for backup—and a 60,000-hour MTBF (mean time between failure) rate.

Other features include a push-button SCSI ID selector (so you can change the SCSI ID without special tools), two switched power outlets (to power the drive and two other devices from a single switch), and both read/write and cartridge-in-use status lights.

The MDS 88 is also easy to daisy chain because it has dual 50-in SCSI connectors and an external terminator (which can be changed without disassembling the unit).

So if you're ready for limitless storage, the MDS 88 is a great solution. It comes complete with an 88 MB cartridge and SCSI 2 cable and is backed by a solid 2-year warranty and NeXTConnection's toll-free technical support.



MDS Drives ... 2 year warranty	
6804 MDS 88 Removable Drive.....	\$599.
3603 MDS 88 Removable Cartridge	107.
3600 MDS 88 Removable Cartridge (10 pack)	999.

CANON OPTICAL DISKS

Don't worry, optical disk users: we haven't forgotten your memory! We continue to stock **512 MB Optical Cartridges** at very competitive prices for all those NeXT pioneers still happily reading and writing multi-megabytes of information to the Cube's optical disk.

And why not? Optical cartridges have so much room on them they can hold the entire NeXTstep Extended Edition complete with Shakespeare and the dictionary. This can come in mighty handy any time you have a hard-drive problem and need to find another way to boot up. And since you can write to optical cartridges, there's nothing like them for backing up and transporting huge amounts of data.

These reliable Canon Optical Cartridges are designed specifically for the 68030 and 68040 Cube and have 256 MB of storage space on each side for a total of 512 MB per disk.

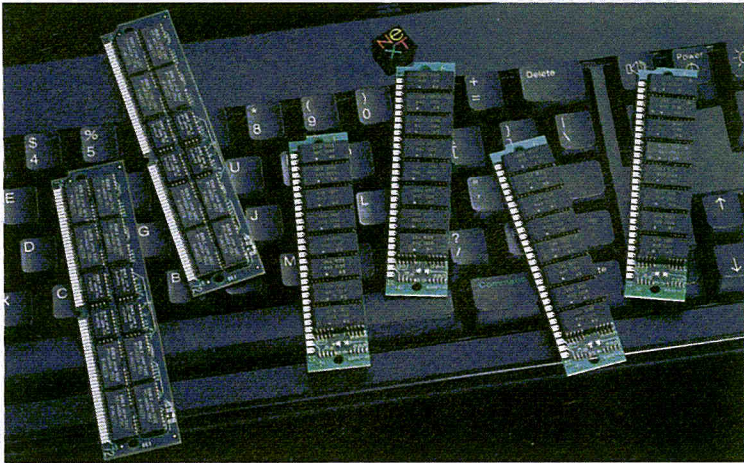


Canon ... 90 day warranty	
9811 512 MB Optical Cartridge MO-502m	\$175.

MEMORY UPGRADES

Running out of RAM? We can help you get back to full power overnight. Just call as soon as you start running out of room and we'll send more memory by Airborne Express for delivery the next business day. Our **4 MB** and **16 MB Memory Upgrade Kits** feature low profile, non-parity, 80ns SIMMs that are compatible with the 68030 and 68040 Cube and the 040 workstation (monochrome only). We also carry **8 MB Memory Upgrade Kits** for NeXTstation Color and NeXTdimension boards. (The latter requires 2 Kits/16 MB at a time.) And Installation? For the workstation we recommend an authorized dealer—otherwise you risk voiding the warranty. But you can go ahead and install them yourself in the cube—we'll provide toll-free tech support.

Memory ... 2 year warranty	
8910 4 MB SIMM (80ns).....	\$125.
1935 8 MB Memory Upgrade Kit (for NeXTstation Color, NeXTdimension, and NeXTstation Turbo; two 4 MB x 8 SIMMs, 70ns).....	call
8911 16 MB Memory Upgrade Kit (four 4 MB x 8 SIMMs, 80ns).....	479.



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Corporate Accounts Welcome

Yes, we gladly accept P.O.s. Always have, always will. In fact, we do everything possible to make corporate mail-order purchasing of computer software and peripherals as easy and enjoyable a process as possible—within the realm of common decency, of course. Many companies (including most of the Fortune 1000 and other just-as-fortunate smaller ones) have accounts with us. If you'd like to open one (or check whether your company already has one), simply call our order line at 800-800-NeXT.

PRODUCT INDEX

GENERAL BUSINESS & PRODUCTIVITY

Adamation ... 30 day MBG <i>(See pages H & I)</i>	
3357 Who's Calling? 2.5.....	\$295.
6817 What's Happening?.....	219.
3334 LiveWire (4 pack).....	599.
Appsoft ... 60 day MBG <i>(See page G)</i>	
4128 WriteNow 2.1	159.
4997 WriteNow 2.1 (5 pack)	739.
DIT ... 1 year warranty <i>(See page L)</i>	
8657 OnDuty 1.0.....	279.
Imagine Multimedia, Inc. <i>(See page F)</i>	
1396 MediaStation 2.1	495.
1397 (5 pack)..... 2199. 1398 (20 pack).....	5499.
1400 MediaStation (Educational).....	295.
Information Technology ... 60 day MBG	
3710 SpeedDex 1.0... 79. 3711 (10 pack)...	699.
Informix Software <i>(See page F)</i>	
3332 Wingz 1.1AB	469.
Insight Software ... 30 day MBG <i>(See page P)</i>	
3308 ElectroFile 2.0	449.
Lighthouse Design, Ltd. ... 60 day MBG <i>(See pages E)</i>	
2409 Concurrence 1.0	795.
Lotus Development <i>(See page B)</i>	
9794 Improv 1.0	549.
1792 Improv/SoftPC Special.....	749.
Teledia <i>(See page J)</i>	
4726 FileMaster 1.0	299.
WordPerfect <i>(See page L)</i>	
8818 WordPerfect 1.0.1	299.

COMMUNICATIONS & DATA TRANSFER

DataViz ... 60 day MBG	
1823 MacLinkPlus/PC 6.0	129.
DIT ... 1 year warranty	
8656 FloppyWorks 2.2L	69.
Dove Computer ... 1 year warranty <i>(See page P)</i>	
9356 DoveFax Desktop (incl. 2400 modem)	279.
7154 DoveFax 14.4 Pro	549.

Hayes ... 2 year warranty

<i>(See page N)</i>	
2307 Smartmodem 2400 (requires cable)	\$279.
7391 Ultra 9600 Modem 669. 5024 Ultra 14.4 799.	
4998 ISDN System Adapter (reqs. cable).....	1199.
Insignia Solutions <i>(See page C)</i>	
1456 SoftPC 2.05	329.
Intel ... 5 year warranty	
5119 2400EX Modem 169. 7880 9600EX Modem 469.	
6420 2400EX MNP (requires cable)	225.
3864 14.4EX Modem (requires cable)	469.
Marble Associates	
1012 Teleconnect	249.
Prometheus ... 2 year warranty <i>(See page R)</i>	
2197 ProModem Ultima (includes 14.4 Modem) 599.	
Software Ventures ... 30 day MBG <i>(See page R)</i>	
4759 MicroPhone II 1.0.....	295.
Telebit ... 1 year warranty	
8907 T2500 Modem (requires cable).....	669.
5080 T3000 Modem (requires cable).....	669.

PUBLISHING & GRAPHICS

Adobe Systems <i>(See page J)</i>	
1827 Adobe Illustrator 3.0.1	459.
9765 Adobe Plus Pack 1.0	129.
9741 Adobe TouchType 2.1.1	175.
1832 Adobe TypeSet 1 or 1833 TypeSet 2 .. ea.	65.
1834 Adobe TypeSet 3	129.
<i>Adobe Fonts Available</i>	
Altsys <i>(See page M)</i>	
6931 Virtuoso 1.0 (available September '92).....	549.
Appsoft ... 60 day MBG <i>(See page G)</i>	
4465 Draw 2.0..... 299. 7028 (5 pack)	1295.
Frame Technology <i>(See page K)</i>	
8241 FrameMaker 3.0	595.
Lighthouse Design, Ltd. ... 60 day MBG <i>(See pages D)</i>	
8621 Diagram! 1.1	339.
8663 Big Green Disk (optical disk only)	299.
MicroMaps ... 30 day MBG <i>(See page J)</i>	
9276 MapArt 1.0..... 95. 2337 (CD-ROM)	95.
Rightbrain Software ... 30 day MBG <i>(See page O)</i>	
6809 PasteUp Publish Pack	595.
Vivid Publishing ... 30 day MBG	
4496 TypeView 1.0	99.

RECREATIONAL

Athena Design ... 30 day MBG	
9457 Culture Shock 1.0.. \$22. 3876 (color) ..	\$25.
David S. Joerg Prod. ... 30 day MBG	
4846 Ragnarok	39.
Lighthouse Design, Ltd. ... 60 day MBG	
3315 Void 2.0 (3 user license)	99.

VIDEO & SOUND

Metaresearch ... 1 year warranty <i>(See page N)</i>	
9682 Digital Ears 499. 9683 (w/SoundWorks) 669.	
9681 Digital Eye (monochrome)	829.
4848 Color Digital Eye	995.
9680 SoundWorks 2.0	269.
Midiapolis ... 30 day MBG	
7141 SoundHouse	59.
5972 SoundBursts (effects)	79.
6025 SoundBursts (percussion)	79.

UTILITIES

Agog, Inc. ... 30 day MBG	
1476 Squash! 1.0... 79. 1478 (10 pak)	699.
CuillaMartin ... 30 day MBG	
6225 Calculator Set (single) 59. 6226 (10 pak) 479.	
Rightbrain Software ... 30 day MBG	
4148 LockScreen 3.2, 4493 LaunchPad,	
4498 Portfolio or 4494 Rulers	ea. 79.
3728 Bundle (All four listed above).....	199.
Teledia <i>(See page J)</i>	
2514 Phrase Player 2.0	129.
2513 Backup Master 1.1	249.
7144 Backup Master 1.1 (floppy only)	79.

PROGRAMMING & MATH TOOLS

Absoft	
8898 Fortran 77 3.1	839.
Objective Technologies <i>(See page H)</i>	
9347 [OT Palettes: 2.0] Chooser	429.
9346 [OT Palettes: 2.0] Math	650.
9345 [OT Palettes: 2.0] SmartField	650.
9344 [OT Palettes: 2.0] Graph	1259.
3282 OT Provide 1.0.....	699.
7142 SqlBuddy (floating license)	399.
ONyX Systems ... 30 day MBG	
2340 BugByte 2.1	239.
Professional Software <i>(See page I)</i>	
9357 Objective DB Toolkit 2.0	895.

Triakis ... 30 d	
1963 T-Calc 1.0... \$5	
1966 DAN, the Data A	
White Pine Sof <i>(See page F)</i>	
6316 eXodus 1.0.....	
Wolfram Resea	
2516 Mathematica 2.0	

INPUT

American Pow	
7105 Smart-UPS 600	
9364 Smart-UPS 125	
7107 Back-UPS 450 .	
Canon ... 1 ye <i>(See page Q)</i>	
3269 Image Scanner I	
CH Products ..	
6814 TrackBall	
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7156 Scantastic (HP	
Tripp Lite ... 2 y	
1528 600VA On-Line	

DRIVE

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Cables ... lifetir	
8908 SCSI 1-50 Pin C	
8906 SCSI 2-50 Pin C	
8909 50 Pin-50 Pin C	
1106 SCSI Terminato	
68030 or 68040	
1540 Mini DIN 8 to Mi	
1441 Mini DIN 8 to DE	
3466 BNC Connector	
3458 BNC T-Connect	

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MATH TOOLS

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Triakis ... 30 day MBG
1963 T-Calc 1.0... \$59. 1695 Math++ 3.0.. \$199.
1966 DAN, the Data ANalyzer 2.0 269.
White Pine Software
(See page F)
6316 eXodus 1.0..... 239.
Wolfram Research ... 30 day MBG
2516 Mathematica 2.0 1699.

INPUT/OUTPUT

American Power ... 2 year warranty
7105 Smart-UPS 600.. 425. 9365 UPS 900 ... 649.
9364 Smart-UPS 1250 869. 9366 UPS 2000 1339.
7107 Back-UPS 450 215.
Canon ... 1 year warranty
(See page Q)
3269 Image Scanner IX-30F & IX-SCANS Bundle 849.
CH Products ... 30 day MBG
6814 TrackBall..... 119.
Second Glance Software
5973 Scantastic (Epson ES300C) 299.
7156 Scantastic (HP ScanJet IIc) 299.
Tripp Lite ... 2 year warranty
1528 600VA On-Line UPS 559.

DRIVES & CABLES

All drives require a SCSI cable.

Cables ... lifetime warranty
8908 SCSI 1-50 Pin Centronics 12.
8906 SCSI 2-50 Pin Centronics (4 ft.) 45.
8909 50 Pin-50 Pin Centronics 15.
1106 SCSI Terminator 29.
68030 or 68040 Modem Cables (8 ft.). ea. 15.
1540 Mini DIN 8 to Mini DIN 8 Null Modem Cable 15.
1441 Mini DIN 8 to DB25 Null Modem Cable 15.
3466 BNC Connector (50 ohm) 3.99
3458 BNC T-Connector 8.99

3465 BNC Terminator without Ground \$5.99
5722 BNC Terminator with Ground 6.
3456 25' Ethernet Cable (w/BNC Connectors) 25.
3432 50' Ethernet Cable (w/BNC Connectors) 39.
3437 100' Ethernet Cable (w/BNC Connectors) ... 59.
IOMEGA ... 1 year warranty
(See page A)
2530 Bernoulli 90 MB Cart. 149. 2467 Tri-Pack 439.
6499 Bernoulli Transportable 90 PRO 679.
7151 NeXT Interface Kit... 65. 2481 Care Kit ... 35.
MDS Drives ... 2 year warranty
(See page S)
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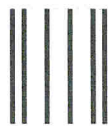
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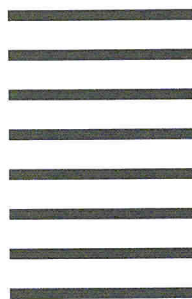
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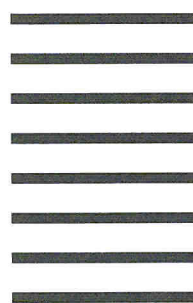
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This spring, be providing LockScreener the fact that the announcement

For most of a difference at first. After inclination to write their code Glenn's. They will ignore the distribution disks and use the code

For some companies, Reid's handy utility program up and down when they are more than two rulers on the or want rulers that measure instead of inches? Just a draftsman might add a program

"Many of our customers customizing our application Reid. "Why not give them

Why not, indeed? Reid also provide some fantastic NeXTSTEP programmers ing their own software. Are to see how to do drag-and for a file, or launch an Workspace Manager just a LaunchPad source to see how

The net result will be tions for NeXTSTEP, which everybody developing software form – including Reid. The for people to develop the NeXTSTEP applications,' chase NeXT systems.

RightBrain's move is to follow Reid's lead. No other with the source code. Their ing life: If a commercial program need, you've had to live with to a different program. The

Some people now think with piracy, ripping off Right Rulers and LaunchPad close

First, why would anyone ket (as are several other De the smarts to write another the time; there are just too written for NeXTSTEP.

Second, there is the matter and putting it into a commercial scrutiny. Glenn has a good buy a program from a company Third, there is the legal

PHOTOGRAPH BY VOLDI TANNER

OBJECT

NeXTWORLD

DEVELOPER CAMP

This spring, RightBrain Software announced that it would be providing the source code for its Portfolio, LaunchPad, LockScreen, and RightBrain Rulers programs. Despite the fact that RightBrain President Glenn Reid made the announcement on April 1, it was no joke.

For most users, RightBrain's decision won't make much of a difference at first. After all, most NeXT users don't have the time or inclination to write their own programs, let alone make changes to Glenn's. They will ignore the source-code directory on RightBrain's distribution disks and use the compiled version of the applications instead.

For some companies, though, RightBrain's decision will be a godsend. For starters, it will make it easy for programmers to add new features to Reid's handy utility programs. Don't like the way RightBrain Rulers shake up and down when they are locked together? Just take out the code. Want more than two rulers on the screen at a time, or want rulers that measure in scaled feet instead of inches? Just add a few lines. A draftsman might add a protractor.

"Many of our customers are capable of customizing our applications themselves," says Reid. "Why not give them the source code?"

Why not, indeed? Reid's programs will also provide some fantastic examples to NeXTSTEP programmers who are developing their own software. Anybody who wants to see how to do drag-and-drop, get the icon for a file, or launch an application in Workspace Manager just needs to look at the LaunchPad source to see how it is done.

The net result will be more hot applications for NeXTSTEP, which in turn will help everybody developing software for this platform—including Reid. The easier we make it for people to develop those "compelling NeXTSTEP applications," the more reason we give for customers to purchase NeXT systems.

RightBrain's move is daring, and I wish that other companies would follow Reid's lead. No other commercial NeXTSTEP program comes with the source code. Think about what this has meant all your computing life: If a commercial program has a bug or lacks a feature that you need, you've had to live with it, beg the program's maker to fix it, or move to a different program. This is the tyranny of commercial software.

Some people now think that other companies will replace tyranny with piracy, ripping off RightBrain's code and ideas to write their own Rulers and LaunchPad clones. This probably won't happen.

First, why would anybody bother? LaunchPad is already on the market (as are several other Dock extender programs). Any programmer with the smarts to write another Dock extender probably isn't going to waste the time; there are just too many other vital programs that need to be written for NeXTSTEP.

Second, there is the matter of ethics. Anybody stealing Reid's code and putting it into a commercial app will have to bear the light of public scrutiny. Glenn has a good name in the NeXT community. Who would buy a program from a company that has wronged him?

Third, there is the legal issue. RightBrain's source-code license allows

companies to use RightBrain's code in their custom apps but not in other commercial products. Anybody who puts RightBrain's source into a commercial application would be inviting a lawsuit.

Besides benefitting its users, RightBrain's decision to ship source code is likely to benefit RightBrain as well. That's because Reid's users—especially those at universities—will fix his bugs, add new features, and send the modifications back for incorporation into future releases of the program. By making his code public, he'll literally be getting hundreds of volunteers on the Net to fix his bugs and add new features to his programs. And then Reid will turn right around and resell their work for a profit.

"Students have a lot of time and great ideas," says Reid. "We'll stick their name in the Info panel, and everybody will be happy."

Reid didn't invent this idea of shipping source code. Adobe, one of Reid's former employers, shipped the source code for its Transcript

package. Most of Transcript's snazzy features and bug fixes came from people at universities who took matters into their own hands. True hackers!

Another good example of the power of providing users with source code is the Cambridge, Massachusetts-based Free Software Foundation (FSF), which has been providing the source code for its free UNIX programs for more than five years. People around the world improve the programs and send back the fixes to FSF. As a result, FSF's GNU C Compiler is the best C compiler in the world; that's why NeXT uses it.

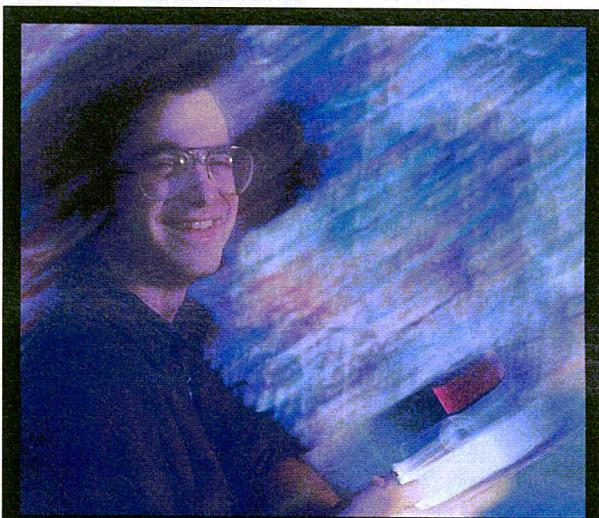
More NeXTSTEP developers should follow RightBrain's lead and make their source code available. But let's move beyond C compilers, developer tools, and small programs that approach freeware: If bugs in these beasts can be fixed and improve the app, then the same has to be true for larger productivity apps.

In this regard, RightBrain seems to lack the courage of its own convictions. Rulers, LaunchPad, Portfolio, and LockScreen aren't RightBrain's bread and butter; that distinction belongs to PasteUp, the exciting page-layout program that Reid is banking on to make his fortune. Reid has decided not to release PasteUp's source code, although he says that he will include source-code examples to help people read PasteUp's internal file format. He may also provide a means for people to make their own custom modifications to PasteUp.

That's a good start. But the real power of object-oriented programming is code reusability. You can't reuse code if it is bundled up inside somebody else's application program. And even the largest NeXT developer doesn't have enough programmers to implement all the good ideas its customers have.

If NeXTSTEP has any chance of becoming the major operating system of the 1990s, developers from different companies will have to stop spinning their wheels in their own corporate cubbyholes and begin working together. ♦

SIMSON L. GARFINKEL, a NeXTWORLD senior editor, is coauthor of NeXTSTEP Application Programming (Springer-Verlag, 1992).



Sourcing It Out

SIMSON L. GARFINKEL

PHOTOGRAPH BY VOLDI TANNER

U S E R S

Steve Jobs Keynote with Concurrence

by MITCH GREEN

to refine the content and flow of the NeXTWORLD Expo talk continuously, literally until the moment he took the stage.

Design for communication

Steve started working on the slide show about a week before the event. The system engineers who were pulling his demos together, including myself, were working in a room across the street from his office at NeXT. We had set up the big servers that he would be using on stage (Teradata, Sequent, and Pyramid) and a number of NeXTstation Turbo Color systems. Steve sat wedged between the Teradata and the Sequent as he created his slide show.

Steve wanted to cover four key areas in his NeXTWORLD Expo keynote presentation: "1991 Review," "What We Learned in 1991," "NeXTSTEP 3.0," and "New NeXTSTEP Hardware for 1992." Because switching between slides and demos can ruin a presentation's impact, Steve planned to cover the first three parts on slides, then demo NeXTSTEP 3.0, present some more slides on the new hardware, demo NeXTSTEP '486, and finally show a couple of wrap-up slides.

The 1991 review featured a series of color graphs in Lotus PresentationBuilder derived from data in a Lotus Improv spreadsheet. The first steps were to pick the graph colors, font and font sizes, and overall size of the graphs. He used RightBrain's Rulers to make the graphs exactly the same size – down to the pixel. As he finished each graph, he pasted it as an EPS file directly into a blank page in Concurrence. Steve used Concurrence's Inspector to ensure that all the graphs were placed at the same location on each page.

Next, he created a Master Page for the text part of the slide show and set fonts, leading, and margins. Steve really likes the Tekton font; it's readable even when projected onto a large screen. He set the page layout to be 1120 by 832 pixels so the finished slides would fill the monitor screen.

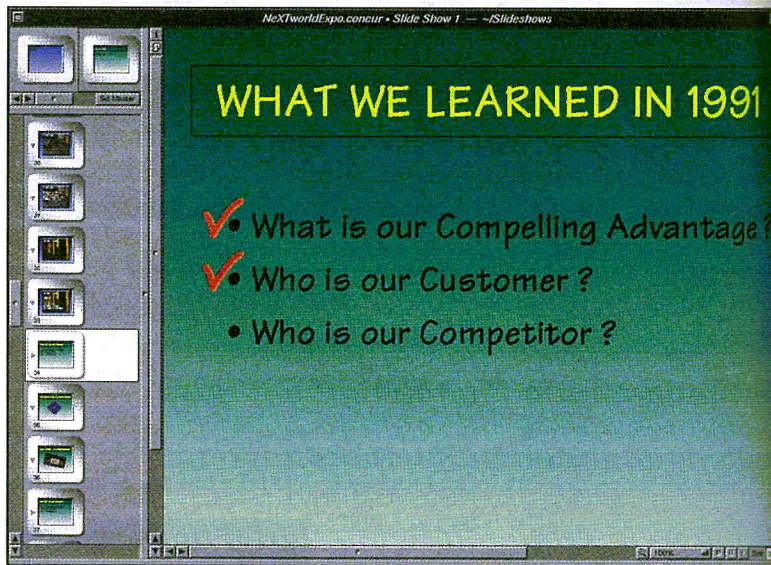
Picking colors was harder. Things that look great on the computer screen don't necessarily look good when projected, so we knew there was a good chance he would have to make last-minute changes to the colors. Initially, he was trying to pick a dark shade of blue with white text. Mike Slade, NeXT's vice-president of marketing, made an offhand remark that the Master Page looked like a chalkboard – to which Steve replied, "Perfect." He chose a wash of chalkboard-green for the background, with yellow Tekton headlines and black body text. The presentation had become an informal "chalk talk."

Assembling the pieces

Concurrence has two presentation views: Outline View and Slide View. The Outline View is great for entering text and organizing the flow of a talk, but Steve worked in the Slide View to get a complete look at the

Steve Jobs had never used Light-house Design's Concurrence when he started to work on his keynote slide show for NeXTWORLD Expo. In the past, he had done all his major keynote presentations using glass slides that required weeks of planning and many thousands of dollars to produce.

Life is different with Concurrence. It gave Steve the flexibility



This Concurrence Slide View from Jobs's final presentation shows the two master slides on the upper left and thumbnails for surrounding slides.

impact of his work. The text slides were relatively easy. They all followed the same Master Slide, and he could move them around in the Slide View.

The image slides took more effort, especially the ones in the "What We Learned in 1991" section of the presentation. For these, we needed to have scanned color images of a NeXTstation computer, a '486 PC, new NeXTSTEP product logos, and red check marks and circles. Steve also wanted to talk about some of the markets in which NeXT has been especially successful by using photographic representations of those markets.

We began by selecting images from stock-photo books. We had the best of these printed from their transparencies and then scanned using HSD's Scan-X Professional. Steve added text, which was overlaid on the photos as a TIFF image. That way, we could take advantage of NeXTSTEP's built-in compositing to set the text as partially transparent, so the photo showed through.

Steve used lots of "builds" in the presentation: A series of slides that add successive bulleted items as you advance through the slide show. For the slides that were primarily text, Steve typed the headline and the first bulleted item, then copied and pasted a duplicate slide below the first, adding a new item. He repeated this process for each slide in the series.

The "NeXTSTEP 3.0" section had tables showing the features and delivery dates for our software versus NeXTSTEP competitors. Once again Steve used Improv, but this time copied the spreadsheets as graphics and pasted them directly onto blank slides. To highlight individual lines of the tables, Steve drew a yellow rectangle exactly the size of the table rows and positioned it behind the table. As he presented the information on successive slides, he moved the yellow rectangle down through each row of a particular table.

Last-minute changes

The completed slide show had 73 slides and a total size of 26MB, mostly because of the 32-bit color images. Steve used a NeXTstation Turbo Color, a beta copy of Concurrence, and a prealpha release of NeXTSTEP 3.0. To play the slide show live, we made a special mouse cable that was 30 feet long with a single button on the end to let Steve advance through the slides from anywhere onstage.

A couple of days before NeXTWORLD Expo, Steve ran through the presentation and demos at NeXT's annual sales meeting. The feedback

convinced him that the background was the tables too small, and some of the old days, this would have been a lowing the dry run, Steve and I worked on it within two hours.

The night before the keynote, we chose final backgrounds for a few slides around, continuing to refine it. In retrospect, Steve could have done, thanks to Concurrence

MITCH GREEN is NeXT's technical advance work

U S E R S

Hints and Tips

by GREG BURD

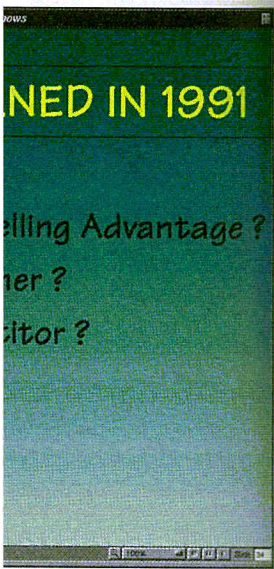
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Diagram

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Create

Tricks with objects. For a Splines/Lines option of the experiment are exponential change the size and shape of the handle points and really want to go off the same menu and watch as



s the two master slides on the

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A series of slides that ough the slide show. For headline and the first slide below the first, ach slide in the series. wing the features and 'competitors. Once spreadsheets as graphics hlight individual lines of e size of the table rows d the information on suc- 1 through each row of a

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o, Steve ran through the meeting. The feedback

convinced him that the background colors were too weak, the fonts on the tables too small, and some of the slides confusing and out of order. In the old days, this would have been cause for panic. But immediately following the dry run, Steve and Mike Slade corrected all of the problems within two hours.

The night before the keynote, when the projector and screen were in place, we chose final background colors. The next morning, Steve moved a few slides around, continuing to refine the talk up to the time the doors opened. In retrospect, Steve considers this the best slide show he has ever done, thanks to Concurrency. ♦

MITCH GREEN is NeXT's corporate systems engineer. He handles the technical advance work for Steve Jobs's presentations.

Hints and Tips

by GREG BURD

Concurrency

Placing a picture within a topic. This may seem trivial, but think about it: When looking at the Slide View, subtopics aren't separated so as to allow room for an image. Also, if you're moving topics around in the Outline View, you don't want to reposition the picture all the time.

Here's the way around this. First, drag the file from the workspace into a topic. The picture will move with that topic and will separate that topic from the following one. Next, move to the Slide View (if you don't have one, create it) and select the slide representing the topic with the picture. When you select the text in the topic in the Slide View and look at the Inspector, you are offered the option to view the picture file as its file icon or as the actual file. There are some limitations: You cannot resize or move the picture. If this is a problem, either wait for 2.0 or drag-and-drop the image as you did in the past, straight into the Slide View.

Diagram

Demo documents. Ever wondered why the Diagram demo documents with all the handy pictures of computers are not shipped with the application? Don't despair. You can find them on the Net in the normal archive servers. These are great, but don't forget that you can create your own PostScript pictures in any drawing program and import them to create your own palette. And when you have something that's really cool, put it on the Net for the rest of us.

Create

Tricks with objects. For a good time, choose Make Spline in the Splines/Lines option of the Object menu. Suddenly your chances to experiment are exponentially larger: Instead of being able to only change the size and shape of an oval or rectangle, you can take one of the handle points and modify the line as if it were a spline. If you really want to go off the deep end, try the Animate selection in the same menu and watch as your spline comes to life. To stop the muta-

NeXT Question

by DAN LAVIN

Q: My Macintosh modem doesn't work with my NeXT. What gives? Do I need a special modem?

Allison Foster
San Francisco, CA

A: No, what you need is a special cable, because the pin-out on the NeXT modem cable is different from the Mac cable. But beware - due to a change in serial-port design, you will need different cables for your NeXT depending on whether you have an '030 or '040. Contact a user group or a NeXT reseller for help in selecting the proper cable.

tion, simply click the document.

There are all kinds of surprises like this in Create and other Stone Design applications. Try holding down the Command, Alternate, or Shift keys while doing some mundane task. Sometimes the best features are the forgotten debugging tools.

Workspace

Modifying the File Viewer. It's surprising to me how many people simply don't go exploring in applications. This is not only the best way to learn but is also great fun. One thing that most people overlook is the Workspace Manager's Preferences panel. This is the perfect place to customize your work environment and make it more useful.

Call up the panel by selecting Preferences from the Info option in Workspace Manager's menu. If you maintain a huge File Viewer to have more Shelf space, here's a handy solution that will free up valuable workspace real estate. First select Shelf from Preferences's pop-up menu, then click the check box for Resizable Shelf. You'll notice that you now have a dimple in the center of the shelf. This acts just like the Librarian app, so drag it down a few steps and you've just doubled your Shelf space. You can also shrink the width of file and folder names in the same Shelf panel. This is done by dragging the arrows on either side of the text field. At its smallest, you can fit at least one more item into the Shelf for every three columns in your File Viewer.

Another way to conserve space is to shrink the default width for the File Viewer, which also affects the width of the Shelf. If you have problems recognizing the names of files because your File Viewer is too small for the name, then you can use this method to expand the width of the File Viewer's columns. ♦

GREG BURD is president of the Albuquerque NeXT User Group.

S Y S A D M I N

Detecting and Handling a Break-in

by SIMSON L. GARFINKEL

We've all heard horror stories about crackers breaking into computer systems, wreaking havoc with data, and compromising private information. If you are responsible for administering security at your site, your primary tools in the fight against computer crackers are periodic backups and an educated user base.

The most important duty of any system administrator is to make sure that regular backups of all data are made. That's because if your system is broken into, the only way you can determine what damage has been done is by comparing your system with the backup tapes.

The next step is to teach your users about computer security. Every user account on your system should have a password, and all passwords should be hard to guess – especially if your computer or network has a modem that allows remote access. Remember, passwords are your computer's first line of defense: If a potential intruder doesn't have a valid password to your system, he or she probably won't get in.

The best password is an eight-character sequence of letters that won't be found in any dictionary. Users shouldn't pick easily guessed passwords, like names, places, or license plate or social security numbers. And don't think that by taking an easily guessed password and reversing it, or capitalizing it, or adding a number, you'll be making it substantially harder to guess. With a 2400-baud modem and an automatic dialing program, a typical cracker can try 100,000 such combinations in just under two weeks, working nights so you won't notice their repetitive dialing.

If your computer is attached directly to the Internet, you'll have other security concerns as well. There's nothing that prevents another computer on the Internet from mounting the disks on your computer's Network File System (NFS) server. Once the disks are mounted, an attacker can view any file or create his own. Other network services have unknown back doors as well – ways that someone on the Net can gain access to your computer without first logging in.

Instead of disconnecting from the Net, set up a *firewall* between your internal network and the outside world. A *firewall* is a router that is configured so packets from the outside world can only be sent to a single machine on your internal network. Concentrate all of your security on this machine: Give it no user accounts, remove the C compiler, and don't run any network services other than mail.

Detective work

Normally, you'll discover a break-in because something about your computer will be amiss – a new account has been added to your `/etc/passwd` file or NetInfo database, or a new version of the `passwd` command has been installed.

Your users will sometimes notice the results of a break-in before you do: Somebody might discover missing files or that a few new files have been mysteriously created. Users should be taught to report all such happenings to the system administrator. Tell them to make the report by telephone – the intruder might be monitoring your electronic mail.

Another break-in giveaway is suspicious activity on the part of your authorized users, like a user who is logged in on two separate dial-up

lines simultaneously, or a user logged in when you know he's hiking in the Australian outback.

System managers should make a habit of snooping around their systems, looking for things that are unusual. Use the `last` command to look at the logfiles of your computers with dial-ins or network access – see who is logging on after hours or over the weekends. Look at the modification times of the programs in the `/bin`, `/usr/bin`, `/usr/ucb`, `/NextApps`, and `/LocalApps` directories to see if anything has changed without your knowledge. Scan the `/etc/sendmail/aliases` file to see if new aliases have been created without your knowledge. Look in your users' home directories to see if `~/.rhosts` files have been created – NeXTSTEP doesn't need them, but an intruder might create such a file to allow remote access from a computer outside your network. Also check the file `/etc/hosts.equiv`.

When looking around your computer, be mindful of people's privacy. But don't be shy, either: Snooping around your system is really no different than having a guard walk around an office at night.

Don't panic!

After a security breach, you'll be faced with many different choices. No matter what has happened, you will only make matters worse if you act without thinking.

Before going on, ask yourself: Do you really have a security breach, or has one of your authorized users simply made a mistake? Was any damage really done? Is it important to obtain and protect evidence that might be used in an investigation? Is it important to get the system back into normal operation as soon as possible? Are you willing to take the chance that files have been altered or removed? If not, how can you be sure changes were made? Does it matter if anyone within the organization hears about the incident? If somebody outside hears about it?

And lastly: Can it happen again?

Before going further, get a notebook and start a log immediately. Write down everything you know about your current security situation and what you suspect.

If you've caught an intruder in the act, you have a number of choices. You can ignore them or try to contact them with the UNIX `write` or `talk` commands. You can look at what they are doing with the `ps` command. Alternatively, you might try to trace the connection using commands like `finger`, `who`, or `netstat`. Lastly, you can break the connection by either killing their processes, unplugging the modem or network connection, or shutting down the computer.

Cleaning up

After a break-in, you'll probably want to shut down your system anyway and take stock of what's happened. Now you'll need to do a thorough check of your disks to see if anything was altered or changed. You might want to reassign passwords to all of your users, delete all `~/.rhosts` files, and scan the file system for new `setuid` files. As a last resort, you can always reload the operating system and backups.

If you know who broke into your system, you might consider legal action, but consult an attorney first. Remember – many computer crimes are actually inside jobs caused by disgruntled employees. ♦

SIMSON L. GARFINKEL is a NeXTWORLD senior editor and coauthor of *Practical UNIX Security* (O'Reilly & Associates, 1991).

S Y S A D M I N

Hints and Tips

by DANIEL MILES
KEHOE AND SETH
T. ROSS

regular backup of every or

User files are the most placeable and critical. System files are located in NeXTSTEP's standard system files since you can always restore them.

Plan for three kinds of backup: a backup of the files connected to current projects, a backup of the files in the file system that are not in the file system that

How often you make backups depends on how often you work alone, you may want to make these files to a floppy disk every month, borrow a tape drive, or use a network file server.

Network file servers. The most common strategy is to back up the files every month. Then, each day, create a backup of the files since the beginning of the month. reused a hundred times or more every week. But don't pin the blame on them securely as a permanent record.

Safety first

♦ If you observe good versions of the document, don't want to save every version. Create an `/Active` home directory. While a backup is in progress, move the `/Active` folder. When the backup is complete, move the `/Archive` folder. Back up the storage space and make it available.

♦ Trust, but verify. When you have off-site storage or transfer, take the time to verify your tape. List the contents of a tape. If the names are there, the data is there.

♦ Backups need to be kept on your computer. Lock the tape. Don't leave backups running. Swipe your tape and all other tapes.

♦ Your NeXT system should have a backup. There's no need to backup if you create a secure backup.

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the **last** command to look
or network access – see
kends. Look at the modifi-
bin, **/usr/ucb**, **/NextApps**,
has changed without your
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mployees. ♦

ORLD senior editor and
& Associates, 1991).

SYSADMIN

Hints and Tips

by DANIEL MILES
KEHOE AND SETH
T. ROSS

Backup strategies

The files on your computer break down into three distinct categories: distribution files (parts of the operating system and application programs) that are never modified; configuration files, that are part of the operating system but modified for your particular work environment; and user files. You should have a regular backup of every one of these files.

User files are the most important to back up; these are both irreplaceable and critical. System files that are customized are also crucial, because your system won't function properly without them. Most system files are located in NeXTSTEP's **/private** directory; lose them, and you'll spend hours or days reconfiguring your system from scratch. NeXTSTEP's standard system files are the least important to back up, since you can always restore them from the original disk.

Plan for three kinds of backups: a daily personal backup of files connected to current projects; a systemwide backup that copies every file in the file system; and incremental backups in which you copy every file in the file system that has been modified since the last backup.

How often you make backups depends on the nature of your site. If you work alone, you may change only a few files a day. Simply copying these files to a floppy disk at the end of each day may suffice. Once a month, borrow a tape drive and copy your entire hard disk to tape.

Network file servers require more elaborate protocols. One common strategy is to back up the entire disk on the first day of each month. Then, each day, copy to tape only the files that have been modified since the beginning of the month. Since the average tape can be reused a hundred times or so, many sites reuse their incremental tapes every week. But don't pinch pennies with the master backups: Archive them securely as a permanent record of what's been done.

Safety first

♦ If you observe good computing practices, you periodically save new versions of the documents you work on. But when you back up, you don't want to save every intermediate version of a document. Here's a solution: Create an **/Active** folder and an **/Archive** folder within your home directory. While a project is underway, keep interim versions in the **/Active** folder. When a project is complete, move the final version to the **/Archive** folder. Back up just the **/Archive** folder – you'll conserve storage space and make it easier to find the final version of a document.

♦ Trust, but verify. When backing up a full system, creating a backup for off-site storage or transporting backup tapes to another site, take the time to verify your tape. Most backup software offers an option to list the contents of a tape or disk. There's a good chance that if the file-names are there, the data will be too.

♦ Backups need to be protected, since they contain copies of every file on your computer. Lock them up! If security is important at your site, don't leave backups running unattended overnight: Somebody could swipe your tape and all of your users' files with it.

♦ Your NeXT system software CD-ROM is your ultimate system backup. There's no need to perform a time-consuming full system backup if you create a script that regularly copies essential configura-

tion files to a folder that is regularly archived. Should your hard drive fail, rebuild it from CD-ROM and restore any configuration files you may have changed. The trick is identifying system files that never change. You can fool the UNIX **dump** utility by entering the date you built your file system in the **/etc/dumpdates** file. The entry will look something like this ("**/dev/rsd0a**" is the file system name):

```
/dev/rsd0a 0 Tue Oct 22 12:00:00 1991
```

♦ Conscientious backing up is pointless if you can't find the right tape when you need to restore files. Get organized with a tape-rotation system. If you back up once a week, keep four tapes, using a different one every Tuesday, for example, and rewriting the tapes once a month. If you back up every weekday, keep five tapes, color-coding each for a different day of the week. Label the tapes clearly with the date each was last used. Remember that tapes wear out; put one of your tapes into permanent storage once a week or month, replacing it with a fresh tape.

♦ Write-protect your backup file after you've created it. Movable tabs on both DAT and 8mm tapes prevent accidental erasure.

♦ If you use the UNIX **dump** utility, be sure there is no other activity on the system, or your backup can be corrupted. Initiating **dump** in single-user mode avoids Russian roulette with your data. To get into single-user mode, press both Command keys and the tilde (~) key simultaneously to get to the NMI monitor. Type **monitor** to get to the NeXT ROM monitor. Once in the NeXT ROM monitor, type **bsd -s** to boot into single-user mode, in which you can run UNIX commands such as **dump**. Alternatively, create an **/etc/crontab** entry to call a script that goes off at 4 a.m., disables mail, and does the backup.

♦ You're not planning against disaster if you back up your system and leave your backup tapes sitting next to your computer. Fire, flood, or theft could eliminate your backups along with your system. To play it safe, store some of your backups off-site. For a small organization, that means the system administrator might take a tape home once a week. Larger organizations will ship tapes to secure off-site storage.

DANIEL MILES KEHOE and SETH T. ROSS are contributing editors for NeXTWORLD.

SYSADMIN

NeXT Question

BY SIMSON L.
GARFINKEL

Q: My printer fan runs all the time even when I'm not printing for hours at a time. I live in California and the power waste is not real cool here. Help.

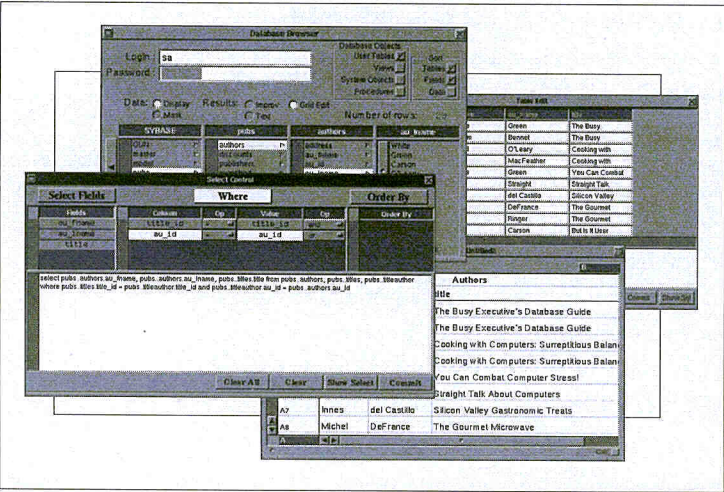
Arthur Hardy
Santa Barbara, CA

A: You can use the program **/usr/etc/nppower** to turn on and off the printer's fan. The printer will automatically turn on when one of your users begins to print something. To turn off the power at any time type **/usr/etc/nppower off**. If you want to turn off the power at 6 p.m. every day, put this line in the file **/usr/lib.crontab** on the computer that has the printer:

```
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```


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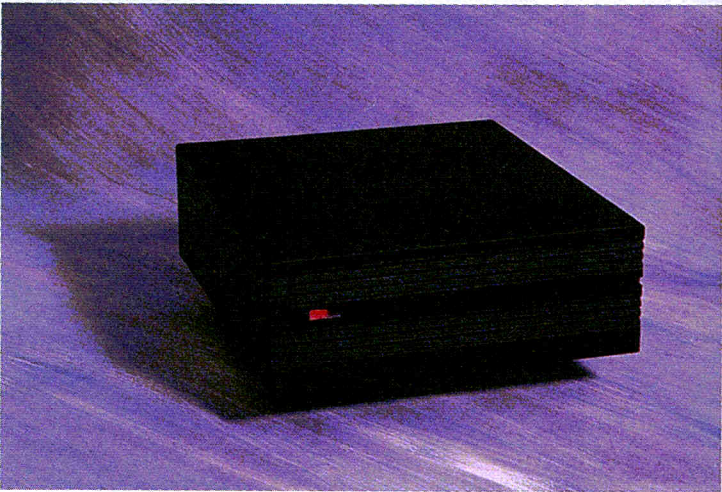


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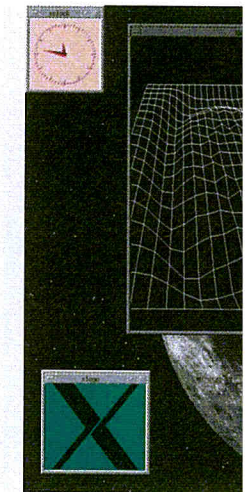


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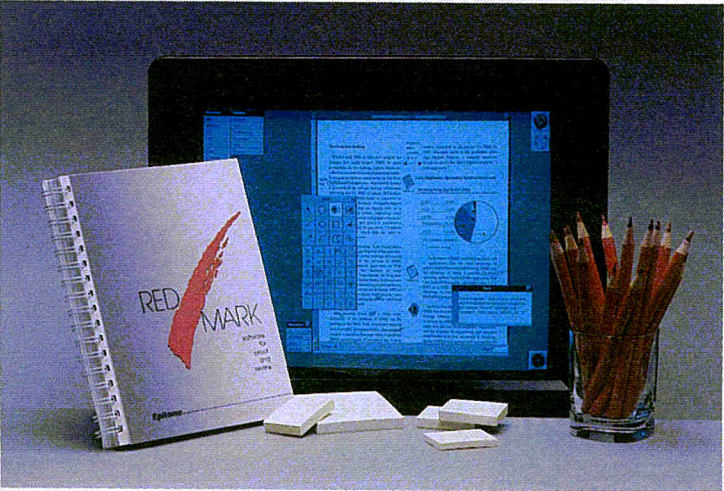


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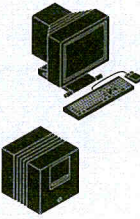
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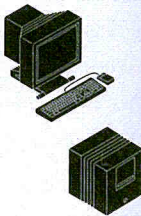
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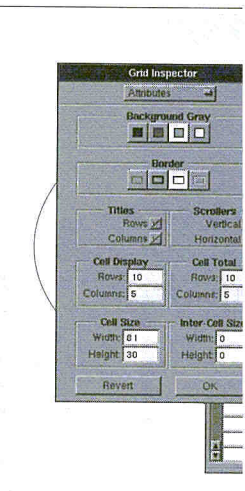
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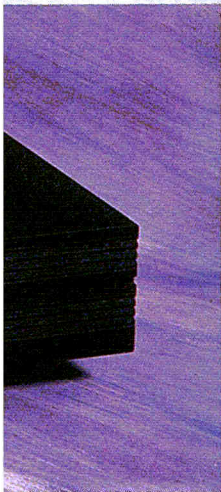
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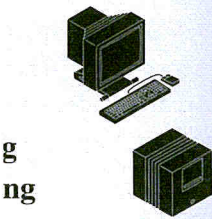


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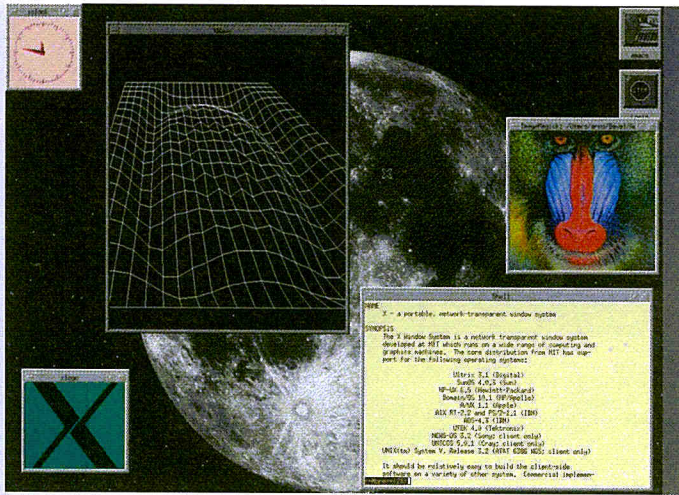


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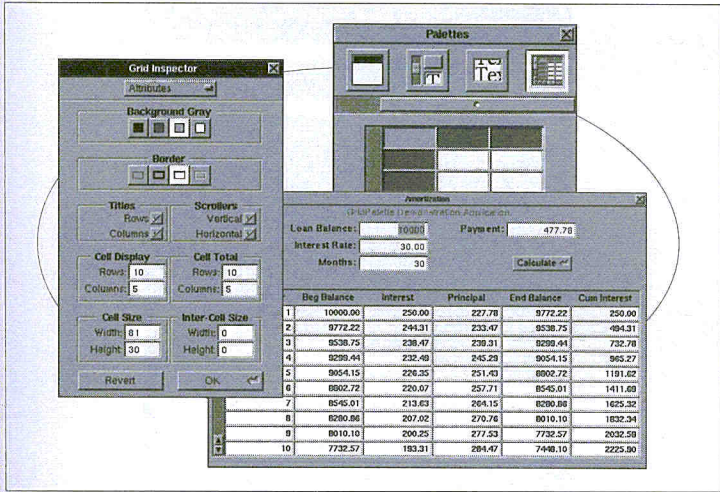
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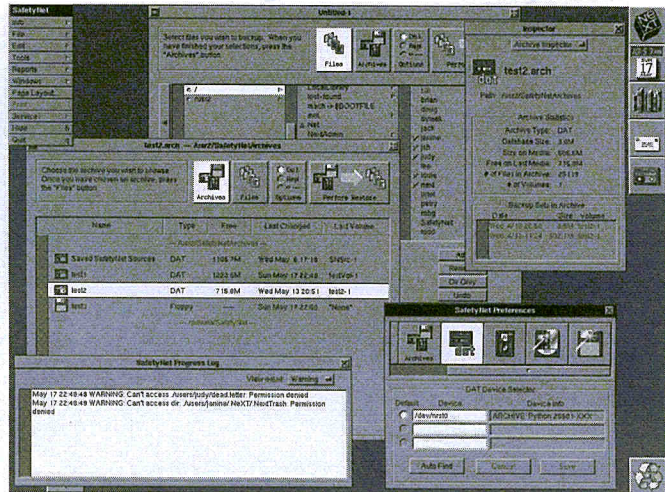
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Product Showcase

Working Without a SafetyNet?

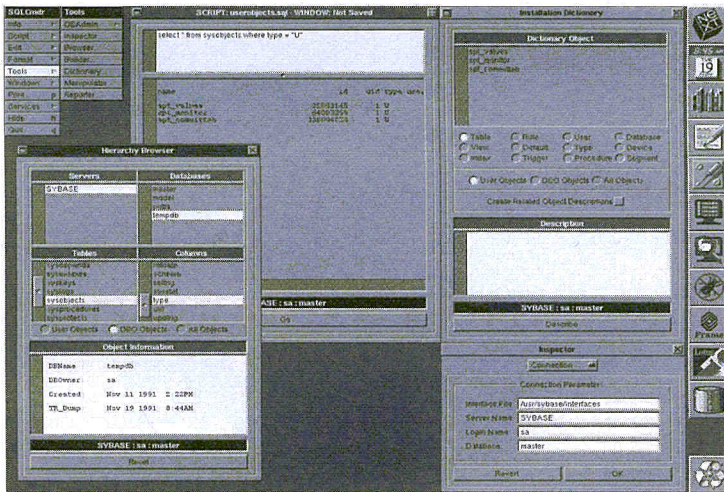


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SQL Database Administration



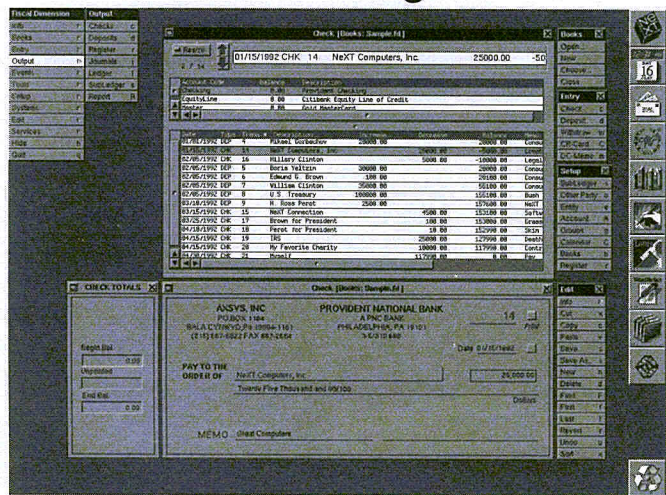
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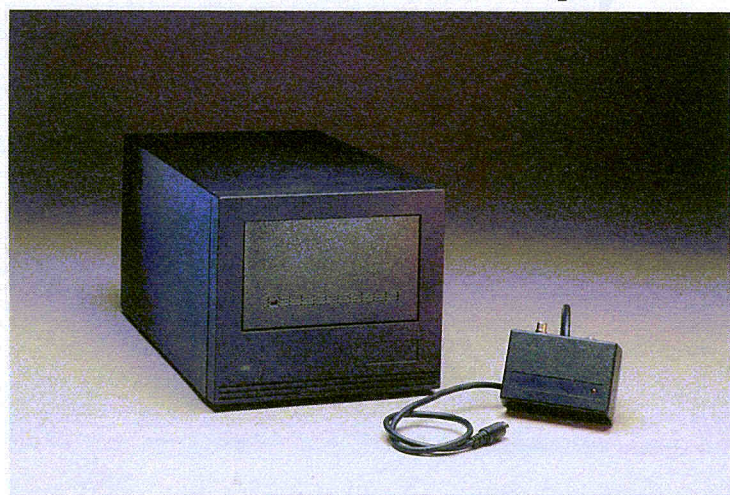


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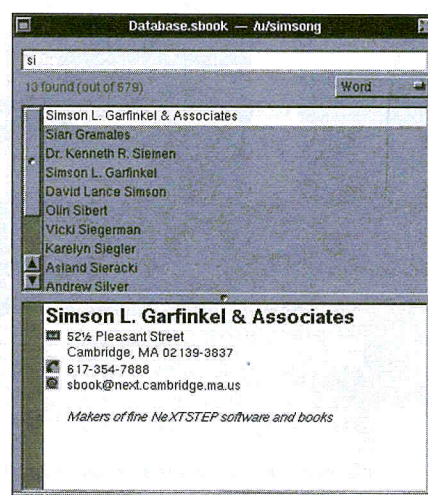
Left: The custom-formatted hard drives that made our reputation in the early days of the NeXT. Pre-tested, plug and play, optional auto-power-on; includes all cables and unlimited 800# support. Prices start at \$1195.

Right: Our NeXT phone interface. Bundled with Voila, our new cutting-edge, object oriented, visually programmed phone/voice-mail environment. With Voila, even non-programmers can make their dreams come true! Voila runs on any phone hardware, including the Hayes ISDN eXTender. Shipping late summer. Also: Low-cost floppy drives for 68040 upgrade purchasers. 1-800-CUBE-RTE

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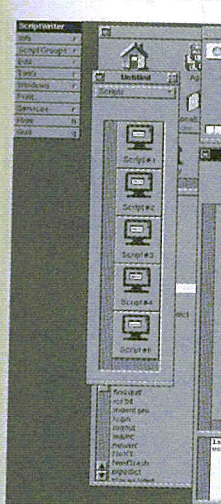
- Searches by name, full-text, or phonetically in seconds
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ScriptWriter allows you to create scripts in a simple environment. Commands are easy to learn. Create pipes and redirection. Scripts can also be parsed in for a script. Panels appear for each script. \$199

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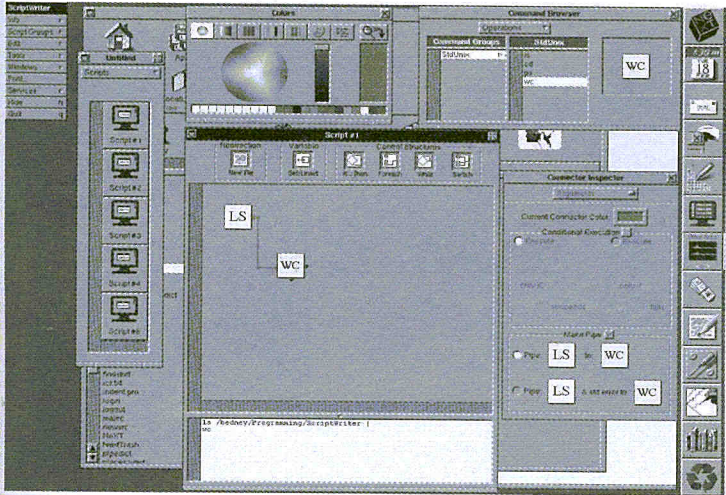
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Shell scripts for mortals!



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Product Showcase

Qscan the intuitive colour scanning solution



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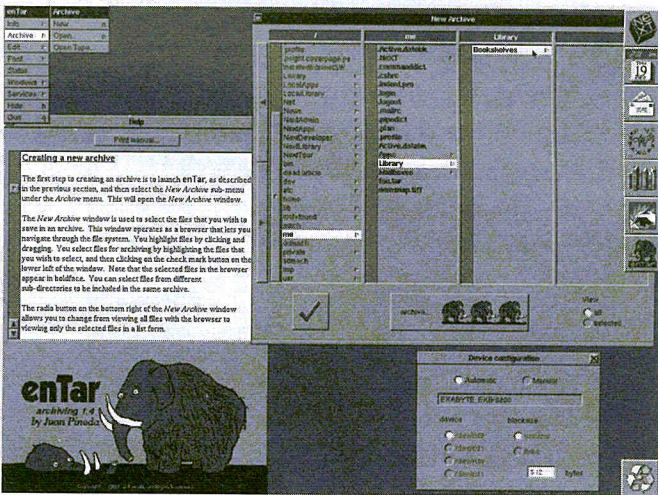
- HP ScanJet II C for fast high quality colour
- HP ScanJet II P for Black & White ADF at a sensible price
- Microtek 1850S Slide Scanner

With Qscan, you can take artwork, photos or transparencies directly into your favourite NeXT App – save as a file or simply copy and paste! Want to know more? Ask for a demo disk right now (works with or without a scanner!)

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Fax: +44 462 438442/Email: uad1129@dircon.co.uk

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enTar™ will effortlessly backup your user data to DAT, 8mm and other SCSI tape drives, or floppy, optical and other removable disks. enTar™ self-configures to use any SCSI tape drive, and features UNIX archive and compression (.tar.Z format) so data may be exchanged with UNIX systems like SUN and IBM.

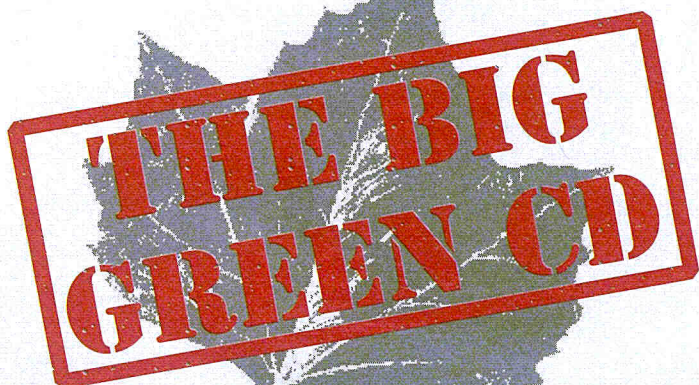
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Product Showcase

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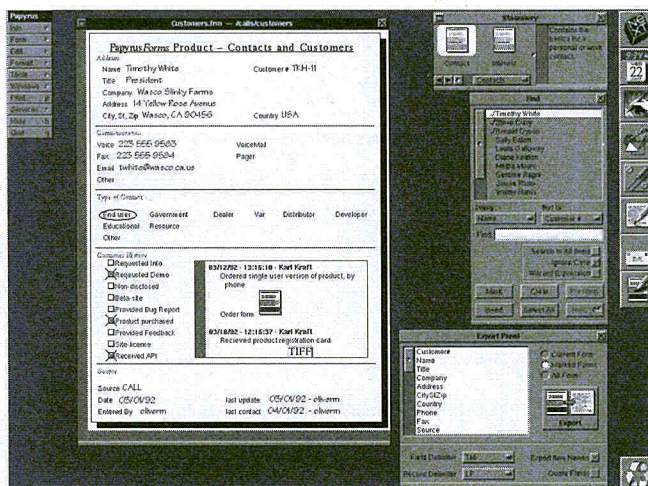


Wondering what to do with your CD-ROM drive? Or need a good reason for getting your own? Here it is: the Big Green CD™! The fully updated CD version of the Big Green Disk™, with over 600 megabytes of utilities, source (NeXTSTEP™, UNIX, GNU), references, programming languages, games, and demos, for both NeXTSTEP and UNIX. Just \$99! From the publishers of NeXTwatch™. Requires NeXTSTEP 3.0, and will be available from NeXTConnection soon after it ships.

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PapyrusForms is the first professional digital forms package for NextStep Computer Systems. PapyrusForms is an easy to use interpersonal application which provides a palette with 50 built-in form templates. Once a template is open, simply enter the information, attach images, voice, files, or other forms, and then save, print, or E-mail the form. The recipient of an E-mailed form doesn't even need to have PapyrusForms! Features like data-cloning and auto-naming reduce typing and increase form-productivity.

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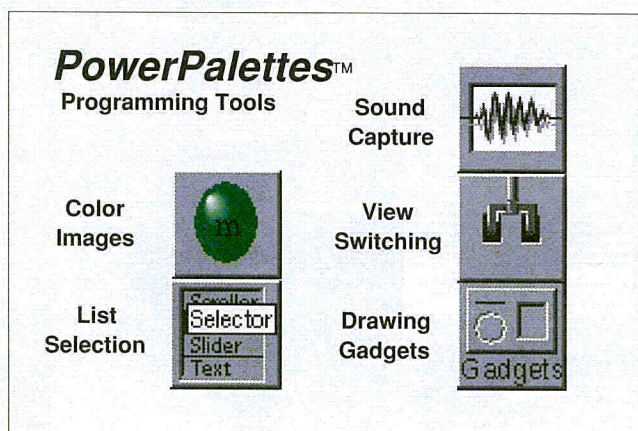
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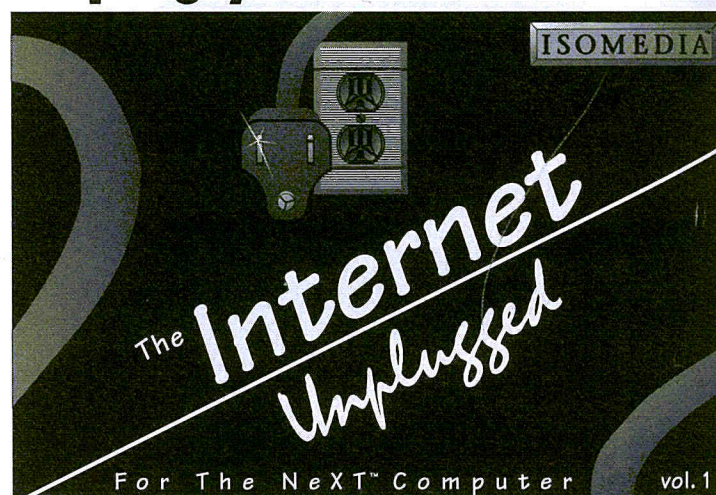


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Unplug your NeXT!

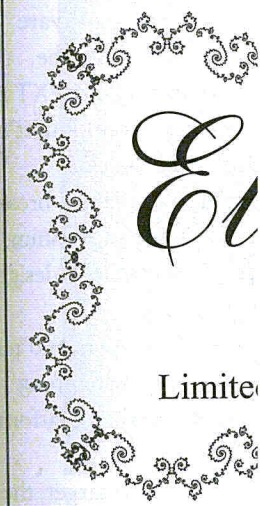


This disc contains nearly all of the freely distributable software that is available for NeXT workstations. This includes Demos, Games, Utilities, Images, CD-Quality Sounds, Programming examples, and Usenet articles through December, 1991. All software has been unpacked so it can be left on the disc, not on your hard disk. If you have a CD-ROM drive on your NeXT workstation, you need this disc. Price \$79.95 VISA/MC/Discover accepted.

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CLIP-ART B



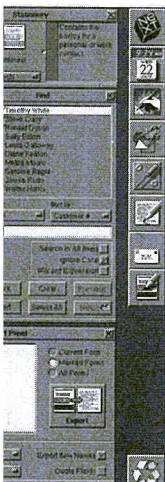
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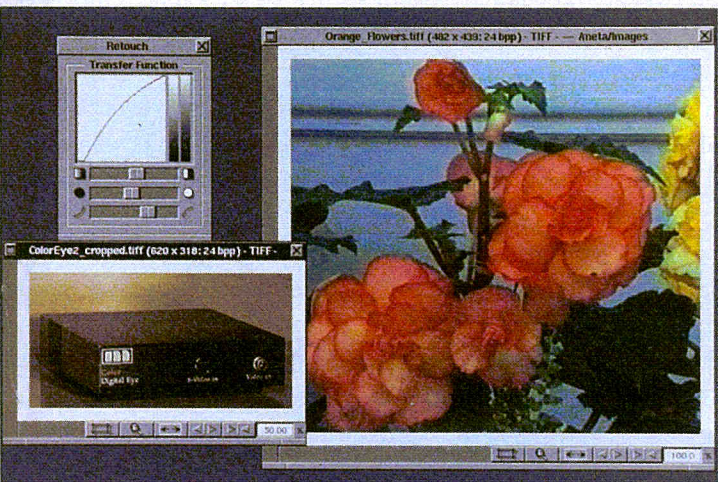
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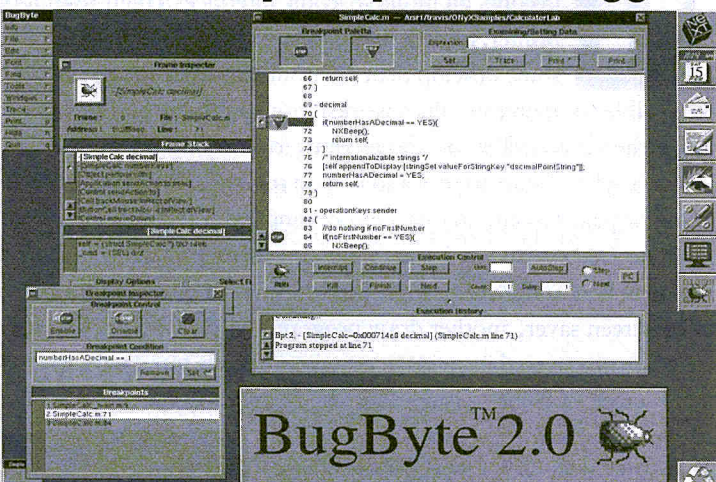
Available July 1, 1992 in NeXT, Mac, and IBM PC formats.

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Product Showcase

Revolutionary Graphical Debugger



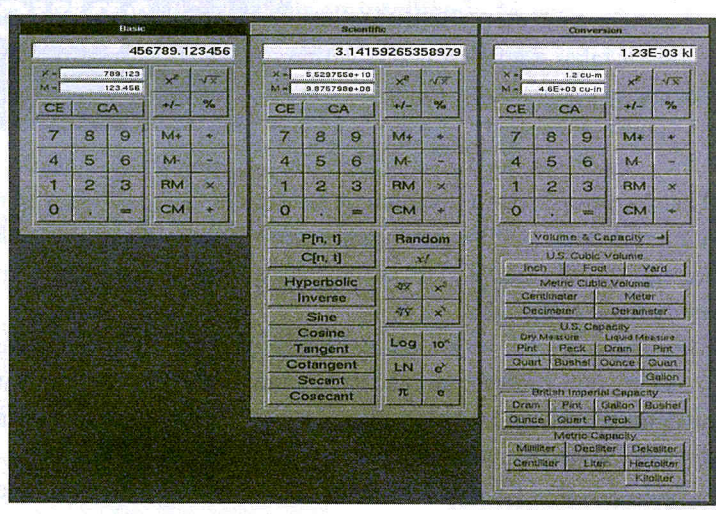
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Circle 124 on reader service card

My recurring dream begins pleasantly enough. A sleek black machine passes before my eyes, and then Display PostScript, endless PostScript typefaces, UNIX, multitasking, an intuitive iconic interface, a high-resolution printer, on-line references, CD-quality sound, an awesome development environment. All the ingredients for an incredible computer-graphics workstation are there. So I sit right down at the keyboard, ready and anxious to change the world.

That's when I start to toss and turn in my bed: no programs for painting or page layout; no image processing; no 3-D modeling or animation; no CAD software. I search the directories frantically. They've got to be in here somewhere. I see a screen saver, a draw program, another screen saver, another draw program. ARRRRRRRRRGH!!!

I wake up covered in sweat, every time, always faced with my own familiar screen of flying toasters and wondering the same thing: Where are the great software developers of the world and where are their NeXT masterpieces? If this development environment is so special, where are the applications to prove it?

I feel the absence most acutely in my own field, publishing and graphics. As I write this, there is finally some reason for hope, as companies like RightBrain, Pages, Appsoft, and Altsys are close to shipping robust professional graphics applications. But the wait has been too long. The same delay has undermined NeXT's success in CAD, animation, 3-D modeling, video, and interactive multimedia.

One reason we find ourselves at this juncture is NeXTSTEP itself. It may be *easier* to develop software in NeXTSTEP's object-oriented environment than elsewhere, but it's not *easy*. It takes a good year of solid programming to really be able to use it. You've got to familiarize yourself with 100 objects and subclasses and learn the correct algorithms, programming languages, and data structures, not to mention understanding the psychology of the user interface and what it takes to make a top-flight application. Application tool kits like NeXTSTEP enable the quick application but often frustrate the complex one.

Having spent four years working with NeXTSTEP, I know enough to create my own tools for graphic design and animation. So I know it can be done. But I can't very well recommend that every end user spend four years learning to program his or her NeXT machine.

Another part of the problem is that good NeXTSTEP programmers are a scarce commodity, and many of them work for NeXT. This leaves NeXTSTEP publishers in a bind. The big players from other platforms – Frame, Adobe, Lotus, WordPerfect – can afford to put together the right team for the right product. A few have come through with top-notch programs, such as FrameMaker and Improv. Adobe, though, did a mediocre port of Illustrator and then retreated into other ports for other platforms. The other big guys – Aldus and Microsoft, for example – are still not interested for the most part because NeXT hasn't come up with the sales volume necessary to justify investment.

That leaves the little guys – independents who specialize in the

NeXT – to hold the torch. Some of these are maturing and getting more ambitious with each project. Lighthouse Design started with Diagram, not very complex and derivative of Draw, but it provided an education in NeXTSTEP programming. Lighthouse's follow-up application, Concurrency, is more ambitious in both code and user interface and is a clear leap into the mainstream application market. Stone Design has evolved in much the same way – from TextArt to Create to DataPhile. These companies are making money on the platform and have proven it can be done.

Other start-ups, inspired by the success of Stone and Lighthouse, are starting too small, getting their feet wet with those screen savers and Dock extenders. These products give good programming experience but are often time consuming and cramp a company's evolution because of their need for tech support.

Of course there's more to good programming than technical excellence. Producing a quality application also takes a good artistic sense; the design

has to be marketable and pretty. Nothing turns off consumers more than an unprofessional look. Strong advertising and sales are necessary, too. Companies like NeXTConnection, Paget Press, and NeXTWORLD magazine are helping many NeXT developers get the exposure they need. But there needs to be more.

NeXT itself can be of more help to third parties in several ways. First, with advice in developer classes. Education influences products more than just about anything else. NeXT's training department is great, but I think NeXT needs to focus on a few specific areas, such as user-interface and application design, and the art of marketing products. NeXT should also be a little more generous with the immense resources in its software department, offering more help from the NeXTSTEP engineers, for example. NeXT has a good developer advocate program, but it's difficult to get an advocate and there is only so much they can do.

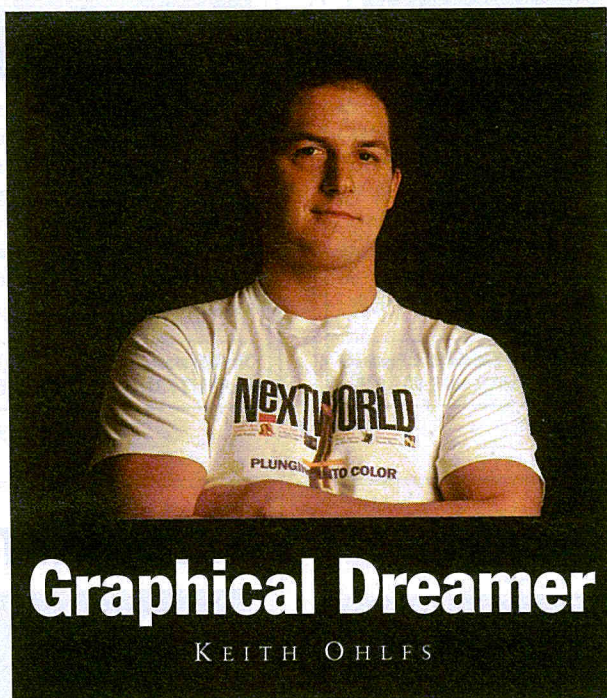
Now's a particularly good time for NeXT's engineers to take a break and spend some time with the developer community – between finishing up 3.0 and heading into the planning stage of 4.0. There's no point to designing a system like 4.0 without having a full suite of products.

NeXT should also be giving machines to potential developers and pursuing more relationships with large developers. How about kidnapping some Adobe executives and convincing them to support the only platform that's going it solo with Display PostScript?

If NeXT's sales pick up this year, or at least come close to target, the company will have the funds to loosen the reins a little and help out their ailing developer community. With or without the money, though, they really have no choice. The future of NeXTSTEP application development remains in the hands of the little guys, at least for the time being.

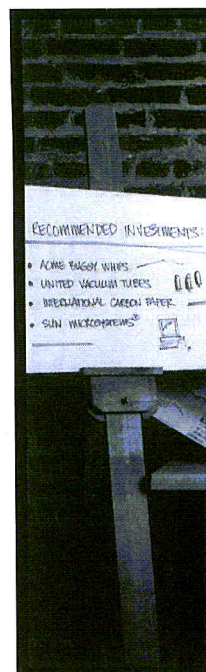
I for one am willing to endure 2000 more flying toaster screen savers – and a few more sleepless nights – if it will produce a few worthwhile quality applications that NeXT desperately needs. ♦

Former NeXT software designer KEITH OHLEFS recently started up his own user-interface design firm.



Graphical Dreamer

KEITH OHLEFS



Workstation productivity



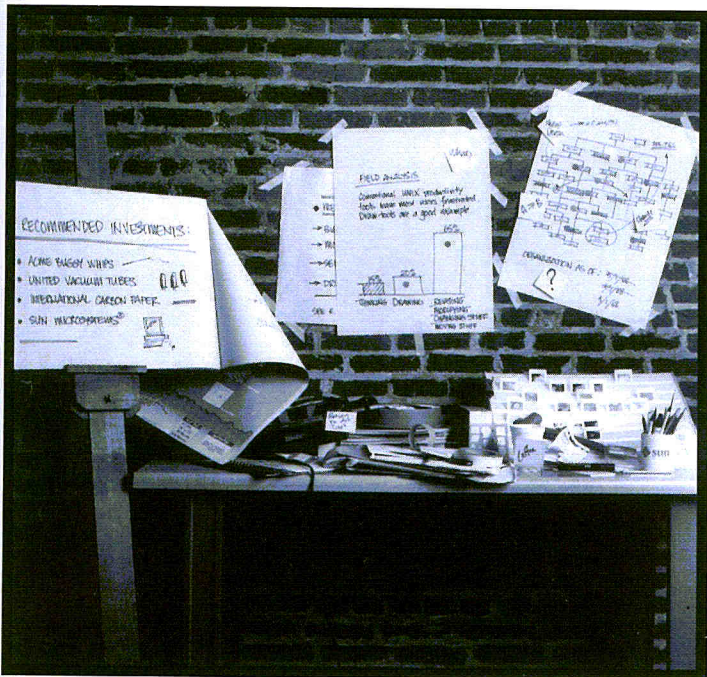
Workstation productivity

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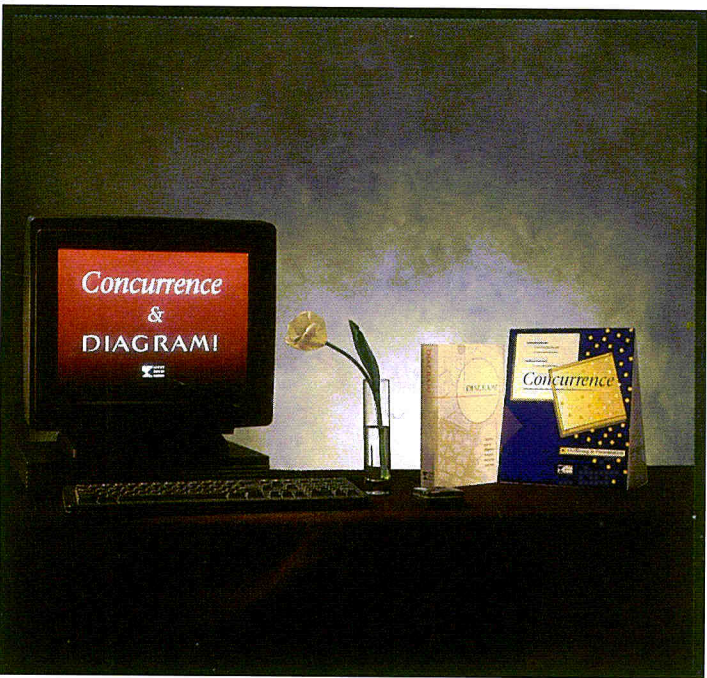
uring and getting more started with Diagram, not aided an education in up application, Concurrency interface and is a clear leap design has evolved in much while. These companies are it can be done. one and Lighthouse, are se screen savers and Dock ng experience but are often on because of their need for g than technical excellence. d artistic sense; the design e and pretty. Nothing turns than an unprofessional sing and sales are neces- s like NeXTConnection, XTWORLD magazine are 7 developers get the expo- here needs to be more. be of more help to third ys. First, with advice in luation influences prod- about anything else. partment is great, but I o focus on a few specific nterface and application of marketing products. e a little more generous sources in its software g more help from the rs, for example. NeXT has vocate program, but it's uch they can do. engineers to take a break nity – between finishing up here's no point to design- of products. tential developers and pur- low about kidnapping support the only platform come close to target, the a little and help out their e money, though, they application development r the time being. ying toaster screen savers – ce a few worthwhile quality

I L F S recently started up

PHOTOGRAPH BY RORY LYSAGHT



Workstation productivity circa 1980



Workstation productivity circa 1992

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